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INTRODUCING VIRGIN QUEENS.

HOW DOOLITTLE DOES IT.

SOME time ago I wrote an article for GLEANINGS, on the desirability of introducing virgin queens, four to six days old, to nuclei from which a laying queen had just been taken. The want, as I then felt, of some sure plan of safe introduction of old virgin queens was, that the queen-breeder might the sooner get a laying queen in a nucleus from which one had been shipped, so that he could live at rearing queens at the low prices to which they had fallen. That such was an object worth accomplishing, I think no one will deny; but, worthy as that might be, I think there is a need now of such a plan of safe introduction for four and five days old virgin queens which amounts almost to a necessity.

The cause of this need of which I speak is the idea which seems to be gaining ground rapidly in the minds of our best bee-keepers, that a great gain can be secured by sending virgin queens from one apiary to another apiary at quite a distance, in order to get a direct cross from bees of the best strains, through the fertilization of the queen. A virgin queen is not fit to start on a journey till she is 24 hours old; and as from two to four days must be consumed in her transit by mail, it will be seen that the fact that *very young* virgin queens may be quite successfully introduced has no bearing on the subject whatever. That a five-day-old virgin queen is a hard thing to introduce, is proven from the fact that I sent nine such queens to one of our most successful queen-breeders, and five to another, and the first lost six out of the nine in introducing, while the latter lost three out of five. I have tried all the plans that have ever come under my notice for introducing these five-day-old queens, and many that have originated with myself, and will say that all, that are any thing like practical, fail so many times that they can not be called a success. That all may study into this matter in the near future, with the hope that out of our thousands of bee-keepers a successful plan may come, is the object of this article. As a little for a starting-point, I will give the two most practical plans which I have tried, which have come the nearest to success.

The first and most often successful is as follows: Make a round wire-cloth cage, about an inch in diameter and 3½ inches long. Into one end fit a permanent stopper; and for the other, saw off a piece of old soft-wood broom-handle, five inches long. Whittle one end down so it will go into the end of the cage ¼ inch, when a ⅝-inch hole is to be bored through, lengthwise. Next fill this hole with the original Good candy, made of granulated sugar and honey, and pack it in with a plunger quite tightly. Now cage the virgin queen in this cage; and as you go to remove the laying queen, take the cage along with you. After having removed the laying queen, and replaced the frames back in the hive, lay the cage lengthwise between the top-bars of the two frames having the most brood in them. Put the quilt over all, and close the hive. As it takes the bees about three days to burrow through or dig out the five inches of candy, the bees are pretty well acquainted with their loss and the state of affairs before they get to the queen. In a week's time I generally find this queen laying, when the introduction is successful, and this happens about four out of five times.

The next best plan is the Alley plan of waiting three days after the removal of a laying queen, when the virgin queen is dropped in honey and rolled over in the same, after which she is dipped out and poured down between the frames among the bees. With this

plan I do not get a laying queen any sooner than with the others, and fail about once out of four times. However, it is a little more simple than the first, but requires the opening of the hive one more time. What we want is a *safe plan of direct introduction;* but direct introduction, except the first queen when making the nucleus, has very nearly baffled me entirely. G. M. DOOLITTLE.

Borodino, N. Y., Nov., 1887.

There is no question, friend D., but that it would be worth lots of money to us to know how to introduce virgin queens when old enough to be almost ready to commence laying; for in that case we could sell a queen and have another one laying in the same hive, in three or four days. In a week she should have the hive pretty well filled with brood. The queen-nurseries made of a lot of cages, to be hung in the hive, claim to accomplish this, but I believe they never do it with enough success to make it really practicable. From what experience I have had I should give your first plan the preference. We should be very glad to hear from our queen-breeders generally in this matter.

ARTIFICIAL HEAT IN THE WINTERING-CELLAR.

DR. C. C. MILLER DISCUSSES DOOLITTLE'S POSITION IN REGARD TO THE MATTER.

AFTER reading friend Doolittle's article on page 738 several times, and each time with increased interest, and also looking over my own article, page 613, I am more than ever convinced that, for me at least, there is yet something to learn about wintering. In the present case, self-interest makes me pocket my pride, and desire that Doolittle may come out ahead. I am sorry to say, that too often, when controversies arise, I am more anxious that *I* may come out ahead than that the truth shall come out ahead. After all, what does it matter whether I am right or wrong in the first place, so I may be sure to be right in the last place—in other words, that the truth may be established?

And now, not for the sake of controversy, but for the sake of lessons to be learned, I refer to some points in Bro. Doolittle's article. With the mercury 10° above, outside, and a brisk wind blowing, he could, in one hour, reduce the temperature inside from 45° down to the freezing-point, by throwing both ventilators wide open; but he was convinced this was an injury to the bees, for the commotion caused did not subside for two or three days afterward. Very likely. I think we may learn that such rapid lowering through so many degrees is undesirable. I never tried such violent measures. With the thermometer 10° above, I have never found it necessary to cool down the cellar; but when warm days and nights came I lowered the temperature, not 13°, but perhaps 4 or 5°, not in one hour, but in 10 or 15, and then the commotion subsided before the cooling process was over, and I think the bees were much benefited thereby.

You say, brother Doolittle, that you "resolved on no more artificial heat of any kind, and not to allow the temperature to go lower than 43°." I have never seen any evidence of harm from stove heat; still, I should much prefer to dispense with it; but so far I have not succeeded in keeping the temperature 43° above without it. Perhaps I ought to do more banking up; and if you can keep at 43° or above, I want to try to approach it, although sometimes our winters go down to nearly 40° below zero. But I must confess, that my anxiety for ventilation has made me less anxious to have my cellars closed up tight. Your experience of last winter, with no effort for ventilation whatever, shakes my previous belief somewhat. Still, if the 50 colonies had plenty of ventilation, would 100 have done as well?

Mr. D. gives a table showing the spontaneous passage of air through walls of stone, etc., and then asks, "Does the doctor now think that doors wide open are necessary?" Now look here, brother Doolittle. If, during a warm spell, I found my bees uneasy, and my previous experience taught me that, if let alone, the uneasiness would increase, but if well aired all would be quiet by morning, and remain so for days, you couldn't stop me from throwing doors and windows wide open; no, I couldn't be stopped by a table of figures ten times as long as the one you have given.

After all, friend D., even if I could beat you at controversy in this affair, and I don't believe I have, you have done what is of more importance—beaten me in practice; for you can put your bees into your cellar and leave them for the winter untouched, while I have already laid in my stock of best Cross-Creek Lehigh nut coal, which will require my attention every morning and evening through the entire winter.

PRICES OF HONEY.

Bro. Root, on page 744 you quote comb honey at 12 to 20, and extracted 10 to 15, making the latter about three-fourths as much as the former. The Honey Column in the same number of GLEANINGS makes the average price of extracted less than half that of comb. Taking the quotations as given by the eleven different houses, comb ranges from 8 to 20 cts., the average of all being 16 cts., and extracted ranges from 3½ to 10, the average of all being a shade less than 7 cts. Have you not put extracted a little too high in proportion to comb?

SPACE BELOW FRAMES.

On page 767 you give three-eighths of an inch as the proper space between the bottom-bar of the frame and the bottom of the hive. I think most will say that, for winter, a much larger space is desirable. As the bees are much given, at least mine are, to building little piles of propolis on the bottom of the hive, a larger space than ⅜ is, I think, desirable, even in summer. I have a space of ⅝, and have never seen a case where any harm occurred from it. I think I should prefer a space as large as could be used without having the bees build comb under the bottom-bar. Would they do so with a space of an inch? C. C. MILLER.

Marengo, Ill., Oct., 1887.

Friend M., we put extracted honey according to demand and supply; and a really first-class gilt-edged article does bring with us at least three-fourths as much as comb honey.—I think the shape of the bottom-bar has something to do with the question about bees building combs below it. With a very narrow bottom-bar they are more apt to do so than with bars such as we usually make. I have seen hives, frequently with a full inch between the bars and bottom-boards, and no combs were built below unless they were waved so as to have the bottom edges run off at one side.

PARTLY FILLED SECTIONS.

DISPENSING WITH THE SLATTED HONEY-BOARD, AND RESULTS.

I HEARTILY agree with Mr. Green as to the value of unfinished sections for the coming season. We have always practiced placing them on colonies needing feed in the fall; and after being cleaned out we pack them nicely away for use the following spring. We find it much better to place only two or three of these partly filled sections in a case, instead of full cases of them, as formerly practiced by us, for we find our poorest honey comes from these partly filled sections, as they will not add to and fill out these equal to sections filled with newly made foundation. It is quite common to have them filled with dark honey from the brood-combs below.

Although a large majority of our prominent honey-producers vote in favor of the use of slatted honey-boards in the production of comb honey (in last issue of GLEANINGS) I can not agree with them. One of our yards of 28 colonies filled 1440 sections perfectly the past poor season; and I will venture to say that a nicer, cleaner lot of honey can not be found anywhere; and I am confident that I did not consume one-fourth the time in cleaning off burr-combs that others would in cleaning up slatted honey boards. We use the T super, as made and used by A. E. Manum, and have our sections run crosswise of brood-frames; and if the space is just right, there will be no stickers to speak of, we not having a quart measure full, from 1800 sections filled in our yard.

As to the use of slatted honey-boards preventing the queens from laying in the sections, I will say we have no trouble on that score, not having brood in one from over 5000 filled the past season. Our success may be partly due to our having the native bees, for I do notice that the Italians are much better at building where they ought not to.

Our bees are in the finest condition for winter, having had the best fall for honey we have ever seen here, in four years' residence. H. W. BASS.

Front Royal, Va., Nov. 3, 1887.

Friend B., you and friend Green and others are unconsciously bringing out another great point in favor of foundation. If I am not mistaken, friend Doolittle said, years ago, that starters made of good-sized pieces of white comb were ever so much better than a strip of foundation, or even foundation enough to fill a section; and I do not know that anybody ever contradicted him, for we all accepted his statement as indisputable. The only point we made our defense on was, that good-sized pieces of clean white comb were much harder to get, and more trouble to put in than foundation. It now transpires, however, and I confess a good deal to my surprise, that foundation is not only cheaper, and easier to put in, but that it is really ever so much better to start the bees quickly to get uniform, nicely filled sections, and to make the whole appearance of the case of honey more taking. Only yesterday we received 22 cases of comb honey, containing 16 sections each. The honey is exquisite in quality, but the sections are very poorly made, four-piece, and much too wide to be used without separators; and the consequence is, that three-fourths, if not more, of the honey was broken out in shipping. I do not know what kind of starters our friend used, who shipped us the honey; but many of the cakes of honey seem to have been attached mainly to the top-bar, some little attachments to the side-bar, and almost none to the bottom. Full sheets of foundation for starters would have saved us the price of them ten times over. As it is, we have a dauby, nasty, sticky muss. It will take three good women a whole day to make it fit even to offer for sale. I can not see why anybody should use four-piece sections when one-piece sections are so much stronger and neater. We have just been handling honey put up by neighbors Shane and Chase, of our own vicinity, and in handling their whole crops we did not get a single comb broken out of a single section. The contrast between these two crops of honey and the one just sent in to us is wonderful. When neighbor Shane drove up with his wagon-load it didn't take me five minutes to decide I would give 16 cts. a pound for it; but had this other shipment been offered to me as it came in on the cars, I should have refused it at 8 cts. a pound; and all this difference comes in the way of managing, and in the trifling additional expense in the way of sections, and thin foundation enough to fill them.

PRESENT PRICES OF HONEY.

ALSO SOMETHING ABOUT THE BEVELED EDGES.

FRIEND ROOT:—I heartily agree with the valuable points made by Dr. Miller regarding changes in the running of our conventions, etc. I think the election of officers should be the very last thing on the programme. Perhaps I am wrong, but it looks that way to me now.

GIVEN PRESS.

I notice what friend Good says regarding the Given press, on page 823. Isn't it strange how we all differ in our theories and experiences? I can readily make the very choicest of surplus foundation with the Given press. As regards making brood foundation within wired frames, I have on hand about 3000 frames so made, and they are certainly "a thing of beauty and a joy for ever." More perfect combs I never saw, and they are made very rapidly. As it is a fact that putting foundation in wired frames by hand is a practical and quite speedy performance, there is no need of buying a Given press for the purpose, especially where one has no great number to prepare.

BEVELED EDGES.

It seems strange that so many people will misunderstand this question of beveled edges. I have no objections to beveled edges for outer covers, nor to any edges that do not come in contact with the bees when being adjusted. Beveled edges do not admit of that lateral motion which is so very advantageous in adjusting edges of supers and cases, with bees rolling out around said edges. I could not be induced to use bevels in this place, even if it cost nothing or less than nothing to create them. They could do me no good. We use the weights on our hives, not to prevent the wind from blowing them over or apart, but to keep the broad shade-board on the hive. Now, were I using your

hives, no matter whether they were filled walls and double covers, or chaff or Simplicity hives, I should always use these shade-boards; and I wouldn't have any other substitute for shade, bothering me in my apiary. We never have any wind that will blow sections of bee-hives apart after the bees have glued them, even without the use of the weights, which, of course, would tend to hold them together while in use for the purpose of holding on the shade-board. Several have suggested hooks and keys and other traps for holding on these covers; but there is nothing so good, so quickly manipulated, and so cheap, as the stones. It is simply a pleasure to handle them; and if I had a student or bee-keeper working for me who objected to handling these stones, I should know at once that he lacked the qualifications which would fit him for a successful honey-producer.

PRICE OF HONEY.

I notice what you say in the last issue about the price of honey, and that you think 8 or 9 cents should be about the stopping-point for extracted honey for 1887. I carried over 2000 lbs. of clover and basswood from 1885, '6, and have sold that and this year's crop for 10 cents a pound, and am quite sure that my amount on hand will not last me till January 1st, at the rate orders are now coming in. Bright amber honey, which is a mixture of basswood and fall flowers, we sell for 8 cents, and it is going rapidly. This honey is nearly all sold to bee-keepers who are wise enough to keep their local demand supplied; but, mind you, it is rich, ripe honey; and when we have any other it goes off by the barrel to wholesale dealers, who, no doubt, sell it off for mechanical purposes. Now, friend Root, let me ask you to consider what was the price of honey last year, and how does that price compare with your proposed 8 and 9 cents, even for ordinary extracted honey, as it is found on the market? Will you please figure the per cent difference in price, and see how it accords with the fact that there is less than one-fourth of a crop the country over? You remember how they used to churn your humble servant for declaring that honey could never become a staple nor any thing like it. Now, suppose that sugar, wheat, potatoes, or even oysters, were only one-fourth of a crop this year; what would be the result of that? Such is the case with potatoes throughout Michigan and adjoining States, and they are bringing a dollar instead of 25 cents a bushel. I think two stores in our place have some comb honey, which they offer for 20 cents a pound, and they hardly sell any at all. I presume people are eating as many potatoes as ever. Honey is not, and never will be, any thing like a staple commodity; and the moment the price is run up, consumers at large give it the go-by. We are getting 20 cents for our comb, all from large cities, where it is purchased by a class who never stop for price, because they never earn the money they possess. JAMES HEDDON.

Dowagiac, Mich., Nov. 3, 1887.

Friend H., it has occurred to me that one reason that has been given for the election of officers when the convention is only half through, is, that there are more present. The first day the attendance is often small, and the same toward the close; and, of course, when the election of officers takes place we want everybody to have a fair chance. This is especially the case in determining the locality of the next convention.—If you think, friend Heddon, it is a pleasure to handle stones, I am afraid we shall have to agree to disagree on this matter. If I have got to use them, I think I would have them made of cast iron, with a good convenient handle. Just imagine a big flat-iron standing on top of every bee-hive, to make the shade-board behave itself during a wind!—In regard to the prices of honey, I think I shall have to let friend Muth talk to you. He scolded me because I was anxious to see the price run up, and *you* are taking me to task because we don't offer more. I suppose you know, however, that demand and supply must regulate what we pay; and I would by no means dare buy all of the nice honey that has been offered us at 9 and 10 cents. I am very glad, however, to know that you are getting 10 cents; but if you mean that this includes a package, holding, say, 50 or 60 lbs., you are selling even cheaper than we do. Potatoes bring with us from 75 to 80 cents, and it does me good to see those who have secured a good crop, get a good nice price for them. When I want to buy, I really enjoy paying 80 or 90 cents for nice ones.

THE GIVEN PRESS AND THE BINGHAM SMOKER.

FRIEND TAYLOR STANDS UP IN THEIR DEFENSE.

MR. ROOT:—I notice you are still asking for the experience of those who have used the Given press, with regard to the advantages of that machine for making foundation; and though I seldom voluntarily undertake to write, I feel that the two last numbers of your journal contain some statements with regard to the press, and the character of its production, that should not go unchallenged. I refer to the remarks of yourself, Mr. Dadant, and Mr. Good; and I must say, after using the press for five years, and making with it all the foundation required by my own apiaries, now consisting of 500 colonies, besides considerable quantities for sale, that you all, so far as the disadvantages you charge against the press are concerned, are entirely wrong.

I am the more surprised at Mr. Good's statements, because he has had some experience with the machine. With me, putting foundation upon wires by hand is not at all to be compared with the press method, either in speed, neatness, or the staying qualities of the foundation. For sections, I very much prefer foundation made on the Given press. I tested it in a small way by the side of that made by one of the most prominent manufacturers in the country. Fourteen sections were filled with each kind of foundation, the two kinds being of equal weight; and the sections, being carefully marked, were put in a Heddon case (no separators), alternately throughout, and placed on a hive containing bees. At the end of the season every section was filled and capped. There was a marked difference in the appearance of the two kinds, in point of plumpness; and on being removed from the case, and weighed, those filled with Given foundation were found to weigh 13 lbs. and 5 oz., and the others 12¼ lbs.—a difference of about 8 per cent in favor of the Given.

There is no difficulty at all in making the foundation "nice, thin, and even." If the sheets of wax as dipped are not of an even thickness, it is only necessary to change the method of dipping, to make them sufficiently so. Why, friend Root, don't you see that your little account of the young woman in Norway entirely upsets most of your objections? The success of *one* person with a machine is a much weightier argument in favor of the machine than are the failures of a dozen persons against it. Many very valuable contrivances are long unused, because it takes a long time to learn how to use them. But what man once does, man can do again. That either yourself or Mr. Dadant could make a notable success of the press, the Norway story proves.

Now, a word on the editorial in the Nov. 1st issue of GLEANINGS, regarding the Bingham and Clark smokers. In what strangely different ways people will look at things! I am now using four Binghams, and have heretofore used about half a dozen Clark smokers, and think I am quite within bounds when I say that, in this locality, the time required during a single season to punch the soot out of the tubes of the Clark smoker, and to unload the bellows of the same material, would, if usefully employed, more than purchase one of Bingham's best, that would need no such expenditure of time. I have often had the fire-box of a Clark come off the bellows, but never a Bingham. Only carelessness, I think, would ever permit the contents of a Bingham smoker to fall into a hive, and it is decidedly less liable to throw cinders than Clark's. For me, I find the Bingham more easily lighted, the fire more easily kept in order, and in no respect do I find the Bingham inferior to the other; and, moreover, the Clark is a source of great danger in the hands of a person who is liable to set it on a hive.

Lapeer, Mich., Nov. 4, 1887. R. L. TAYLOR.

I am very glad indeed, friend T., to hear what you have to say in regard to the Given press; and it certainly does seem as you say, that friend Dadant, ourselves, and others, ought to succeed with it; but we have had two different presses sent us, and I have wasted time and money in trying to make them come anywhere near our foundation-mills in regard to rapidity and quality of work; but we were obliged to give it up. In the first place, after spending days in papering up the dies, according to the instructions of friend Given, we could not get foundation with an even base. The base would be thick in some places and thin in others. Neither could we get the sheets to come off without more or less bother and tearing; and after we got them off they were not fit to send out. Perhaps we didn't have a good press; and, by the way, friend Given said he feared it was a difficult matter to make the press work as well with the L. frames as it does with the smaller frames, such as friend Good uses. My impression was, that you used the L. frames. But perhaps I am mistaken. In your experiments, you say you got more honey in the sections where the Given foundation was used. Now, that may not be any particular advantage, as I understand it. If the bees filled those sections first, or with more rapidity, having the Given foundation instead of the other, then we should have to pronounce it better. I know it is true, that there are many valuable contrivances which often lie idle for years, unused, because no one ever gets acquainted with them; and I have sometimes sadly meditated that this must necessarily go on. I should say you hadn't ever really got the hang of the Clark smoker. Please remember that many of our large and successful apiarists use the Clark, after having tried both kinds.

In regard to the smokers, Ernest replies as follows:

Yes, it is a little remarkable that we look at things so differently sometimes. I believe it is a good deal in getting used to things, in the first place. About the sooty accumulations in the Clark, I am ready to concede the point to you, that the time required during a single season to clean the soot from the tubes of the Clark would several times pay for a Bingham, *if* there were nothing in the latter to offset it. While it does take time to clean the tube in the Clark (on an average, two minutes a day in the working season, with us), it takes us as much time to refill the Bingham, during the day. I never saw the Bingham yet when it required to be refilled but that I found it quite uncomfortable to handle the smoker-cone in pulling off and putting on again. If you have an old cloth handy, or something of the sort, with which to handle the hot smoker-top, we might get along very well; but it has been our experience that we can replenish the Clark in about one-fourth of the time that it takes to replenish the Bingham. In general, it takes about as much manipulation with one smoker as with the other; and while some might save valuable time by the use of the Bingham, we so far have not been able to discover the gain or loss of time in the use of either one.—It may be carelessness in letting the smoker-top drop off, so as to precipitate coals down among the bees; at any rate, we have as careful a man to handle the Bingham as we ever had in the apiary; in fact, he was selected for an apiarist because he was always very careful in every thing that he did. With some, the Bingham may be more easily lighted than the Clark. With us, the latter is more easily lighted, and, in general, is more quickly manipulated, if we except cleaning out the soot in the morning, preparatory to commencing work in the apiary. You say the Clark is a source of great danger in the hands of a person who is liable to set it on a hive. I presume you refer to the sparks which occasionally drop out of the breech end when the sliding door is slid so as to leave too wide an opening. While I am ready to concede this, yet I think it is "only carelessness" that would endanger the hive or its contents. When we set the Clark smoker on the hive, we invariably lay it on its bellows, the valve side down, and we never make a practice of setting it down upright. Having considered some of the objections which you make, I want to say just one thing more: I do like the hot-blast principle; and I am sure that it gives a little better smoke, though it is not without some objections.

A NORTHERN BEE-MAN'S VISIT SOUTH.

THE QUESTION OF OVERSTOCKING; 800 COLONIES IN ONE APIARY.

I HAVE just returned ftom a visit south to friend Viallon's, at Bayou Goula, La.; friend Stahl's, at Kenner, La., and friend D. McKenzie, of Camp Parapet, La. I found friend V. the same pleasant, agreeable, well-informed gentleman whose hospitality I had enjoyed several years previous. Owing to lack of sufficient reliable help, his apiary was not so large nor in so good condition as I had seen it on a former visit; but as he has now engaged an excellent young man to assist him the coming season, all will soon be booming again. His yards and grounds are a delight to all lovers of the beautiful. What do you think, friend Root, of persimmons that measured over *10 inches in circumference?* He has quite a number of persimmon-trees of the Japanese variety, that bore abundantly this year, and he presented me a twig with three of the fruit on it measuring as above.

Friend Stahl, of Kenner, should be a good authority on overstocking, as he has over 800 full colonies in his home apiary, and says he sees no more difference in the yield than when he had only one hundred colonies. If there is any one in the South who fully understands the practical manipulation and management of bees for profit, it is friend Stahl.

Friend McKenzie has some 250 to 300 colonies in his home yard; and though only about 6 miles from friend Stahl's, he complains of overstocking; but as friend Winder has some 300 colonies within 3 miles of him, and he is further from the swamp than friend Stahl, that may account for it. None have made as much honey as usual, though friend Stahl reports some 16 bbls., and I heard that friend Winder had taken about 20 bbls.; but I didn't have an opportunity to see friend W., and verify the above report. I saw or heard of no cases of foul brood, and my experience and observation lead me to believe that, where there is a continued and abundant yield of honey in the proper season, there foul brood can not flourish, and soon dies out, while the reverse is true; viz., great scarcity of honey during some portion of the season tends to develop it, and to add to its malignity.

The cane crop is a magnificent one this year in Louisiana, and all intelligent planters with whom I conversed feel rejoiced at the prospect of their Northern brethren soon joining them in raising enough sorghum sugar to supply all our own needs, and have some to export too, and save the one hundred million dollars we now send abroad for sugar. E. T. FLANAGAN.

Belleville, Ill., Nov. 2, 1887.

I do not know that persimmons ten inches in circumference are any thing wonderful, friend F., for I never saw a persimmon, and so I don't know what the orthodox size is. Some friend in the South once sent me a little box of them, but they were all rotten before they got here.—Eight hundred colonies in one yard is astounding; and before I can believe it possible that so many can do even tolerably well in such numbers, I should like to see a report of the honey received per colony. I should not expect it to be ten pounds, even during the most favorable season. Still, I am open to conviction; and I should feel the same about 250 or 300 colonies in one yard.—Very likely you are right in the point you make, that poor seasons develop foul brood.

ANOTHER GOOD MAN GONE FROM THE RANKS OF BEE-KEEPERS.

DEATH OF A. C. KENDEL, OF THE CLEVELAND SEEDSTORE.

WE are pained to hear that our old friend A. C. Kendel died Oct. 31. Friend K. has been widely known as a Christian business man in every sense of the word. In all his large business in commission on fruits and honey, I do not remember that I ever heard a complaint of injustice, inattention, or even carelessness. Every one who had deal with him had reason to say, "Well, *there* is an honest, straightforward, upright man, any way." I remember years ago, when we first secured our great crop of clover and basswood honey, that friend Kendel sold tons of it for us. Well, on one lot that we sent to him, put up in bottles, his men, in handling the boxes, left one box upside down; and as the corks were not very accurately fitted, a great many of the jars were found empty.*

I believe the boxes were marked to be kept a certain side up; but, as is often the case, the instructions were not noticed or observed. Friend Kendel decided, without being urged, that he ought to pay for every drop lost; and in all my deal with him I have found him just that way. Some of you may say that this was simple justice; but I tell you, my friends, when you find a commission-man who will do like that, you have found a jewel. I proposed to stand part of the loss, but he pleasantly insisted on making it all good himself.

He has written for the pages of our journal at different times; but of late his large business has, I fear, debarred us from the pleasure of hearing from him. Only a few days ago I had a pleasant talk with him, and I did not notice but that he was as well as usual. Is it possible that too much business and too many worldly cares have taken this good man from us before his time? Mr. K. has been doing a large business in seeds as well as a commission business; and I believe every one has learned to feel that, whatever Mr. K. has said in regard to seeds is to be relied on. We are informed that the business of the Cleveland Seedstore will go on just as in times past; and may God give the new hands in the business grace to keep its reputation where it has been for so many years.

* I am really afraid, friends, that, had the position occupied by myself and friend Kendel been reversed, I should have written something like this: "Friend K., why did you not cork your bottles so they would stand being left upside down? You ought to know that, in the rush of business, it is next to impossible to keep packages one exact side up, even if they are so marked." As I recall the transaction to mind, I feel ashamed of myself, even now. Friend K. lost some little money in the transaction, but he put in a good big corner-stone in the way of a good Christian character; and, my friends, did he not also put in a good solid stone for Christ the Savior? "Inasmuch as ye have done it unto one of the least of these my brethren, ye have done it unto me."

THE ANATOMY OF THE HONEY-BEE.

ANTERIOR LEGS OF BEES.

NEXT to the posterior legs, the anterior are most interesting objects of study. The first three joints of these legs (see Fig. 1) are not essentially different from the same in the posterior legs. The compound hairs are abundant, and, as seen in the microscope, are very beautiful. The tibia is not modified, as seen in the posterior legs, but has a strangely modified tibial spur, Fig. 2. This resembles a short-handled knife. The part answering to the blade is strengthened at the base by a sort of knob; it is wide and blunt at the end, with a projecting point at the back. The inner part of this blade consists of a soft membrane, just such as we should like to use as a duster. This modified tibial spur is found in all hymenoptera, though it is greatly varied in different families and genera, and may be wisely used in classification. Thus in *Nomada* the membraneous blade is quite distinct from the back portion of the spur, which is continued in a long spinous point. In two families of wasps, *Sphegidæ* and *Pompilidæ*, the edge of the blade is fringed with a beautiful delicate brush, and in *Sphex* the end is deeply notched, so there are two points, between which are several finger-like projections. In the ants there is a double row of this exquisite fringe, making a brush that is most beautiful, and the blade extends in a graceful curve to a beautifully fringed point. The membraneous blade is seen, even in saw-flies, which are among the lowest of this most interesting order of insects.

Just opposite of this tibial spur in the worker-bee, on what might be called the elbow of the tibia, is a most delicate brush, Fig. 1, just such as the bee could use very conveniently and effectually as an eye-brush.

The basal tarsus is also broadened in the anterior leg, and contains a hemi-cylinder at its base which is smooth on its inner surface, but contains on its outer margin some seventy or eighty teeth, or spine-like hairs, much the same as those seen on the blade of the tibial spur of the sphex wasps. This comb-like cavity is exactly covered by the blade of the spur when the joints are placed the one upon the other. Thus we have in this exquisite apparatus the antenna-brush, or cleaner. It is found in the drone and queen, as well as in the workers. The cavity is found in all bees and wasps, and in all hymenoptera, if we except the lower families. In the gall-flies, cynips, saw-flies, and some others, the cavity is not even suggested, though, as before stated, the membraneous blade in the saw-flies shows that the arrangement is not wholly obsolete in these insects.

The function of this curious apparatus as an antenna-cleaner is easily determined. We have only to take a bee or wasp by the wings, and dust its antennæ with chalk or flour, and then put it on the window of our room, when it will be observed to

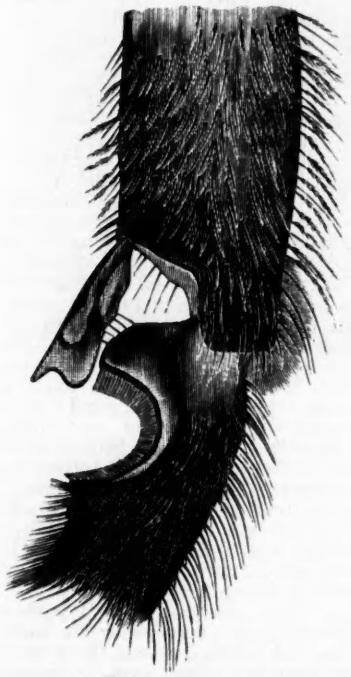


Fig. 2.

Fig. 1.

THE FRONT LEG OF A BEE, WITH ENLARGED VIEW ON THE LEFT.

rub its anterior legs over its head; and by close attention, especially with a small lens, we can easily see one antenna and then the other passed through the antenna-cleaners, and soon we shall notice that the dust has all been removed.

After the bee has passed its antenna through the cleaner, it takes the leg used and draws it through between the basal tarsi of the middle legs. These tarsi have pollen-combs of stiff hairs on the inside, and thus the antenna-cleaners are in turn cleaned. I have found that many wasps vary this last operation. They pass the forward, or anterior legs, between the mandibles, or jaws, just after they are used to clean the antennæ, and so the antenna-cleaners are cleaned by aid of the jaws rather than by use of the middle legs. By closely watching a bee as it backs out of tubular flowers, we have a fine opportunity to see it use these antenna-cleaners in freeing its antennæ of the pollen.

I have become very much interested in studying these peculiar organs. I believe in many cases we could, simply by studying these organs, place the bees, wasps, etc., in their respective families, and, in many cases, in their genera. Nor should we wonder at this. The antennæ have been shown by entomologists to act as organs of smell, and we all know that they are most delicate tactile organs. How necessary, then, that they should be kept free from any thing that would dull their sensibility! We should expect, then, that, as these organs have been developed, they would be modified to correspond with the habits of the insect. Some of the bees and their allies work only in the pollen dust; others dig in the earth, or gather mud, while others bore in wood, etc. Thus each would require a different style of brush to free the antennæ of taint. Those that use the jaws to clean the cleaners would doubtless have a different style of cleaner than would those that use their legs for this purpose. Again, the higher the instincts, or, better, the higher the intelligence of the insects, the better or higher would be the development of such important organs as the antennæ. Likewise, any other organ like this antenna-cleaner which is related to the antenna, would be more or less highly developed, to correspond with the complexity of the antennæ themselves. Hence we do not wonder that these beautiful organs are of great use in our systematic study of this most interesting order of insects.

THE MIDDLE LEGS.

The middle legs are peculiar only in the possession of the sharp tibial spur and the beautiful pollen-combs on the inside of the basal tarsus. These latter are formed of stiff hairs, like those on the posterior legs, except that the arrangement in rows is absent.

It has been suggested that this spur has been used to pry off the pollen masses from the worker's legs as they push this pollen into the cells of the comb. The fact that queen, drone, and all others of the hymenoptera, have this spur even better developed than do the worker-bees, as also the fact that the stiff hairs on all the four posterior legs are better adapted to perform this office, makes this view doubtful. The combs not only aid in removing and transferring the pollen to the pollen-baskets, but, as we have seen, they serve to clean the antenna-cleaners, and also to push the pollen masses from the posterior legs into the comb-cells.

Agricultural College, Mich. A. J. COOK.

Friend C., may I offer a suggestion in relation to the above? A bee is a rather delicate piece of machinery—at least it begins to look so as you describe and illustrate it to us. Well, dust is one of the foes to any piece of delicate apparatus. When I worked at repairing watches I used to have to scold the apprentices over and over again for leaving watches on the bench uncovered by their appropriate glasses; and much talent and skill have been expended in making dust-proof cases; for when a watch gets full of dust it is a watch no longer, and the dust spoils the delicate machinery if not removed. Well, as it would not be practicable to keep a bee shut up in a glass case all the while, the Creator has, in his infinite wisdom, provided the insect with beautiful complicated machinery for freeing itself from dust. Did you ever notice that, when a bee gets on the floor—at least an uncarpeted floor—he is pretty soon disabled by the dust he finds? We might think the floor was tolerably clean; but there is almost always dust enough to kill him in a short time, if he can't fly away and escape the danger. I have often picked them from the floor and carried them outside to some green leaf, and watched the curious apparatus you have described, while the little fellow goes to work to clean himself up. He will work patiently a long while before even attempting to try his wings. He seems to be provided with an apparatus also, to brush off these delicate membraneous wings, as well as his feet, antennæ, head, and eyes. I have often made the children laugh by showing them a bee combing his head. He throws his arm across his neck, as it were, and then slips it over his head in such a way as to brush the dust off forward; and from your engravings, we notice that these beautiful fringe-like hairs help him to dust himself off. Perhaps you propose telling us something about this before you get through. Well, after he has brushed off his head, combed his hair, brushed down his whiskers, pulled down his vest, and scratched himself all over, as it were, he spreads his wings and goes off, a clean, bright, happy bee. Now, friends, when you see your little pets hopelessly floundering on the floor, do take them out to God's green fields, and give them a chance for life. Bees were not made to be indoors—that is, doors made by hand. In their own little houses, no particle of dust is ever permitted to remain. Was there ever a housewife so successful (Mrs. Root is a great foe to dust and litter, but she can not come up to the bees) that she could keep every crack and cranny of her home so exquisitely neat as is the interior of a bee-hive during the roar and hum of the busy season? No matter if thousands are tramping out and in incessantly, no particle of dust ever finds a lodging-place. Every thing is scraped and polished—yes, and varnished too; and come to write down

the real facts of the case, the whole establishment is kept constantly as neat as wax. Funny, isn't it? But you see the bee has a beautiful apparatus for doing it, as Prof. Cook has told us; and he not only has the tools, but he *uses* them.

THE REVISED EDITION OF THE A B C OF CARP CULTURE.

A COUPLE OF ILLUSTRATIONS TAKEN FROM THE BOOK.

SIXTEEN pages of this work are now out; and as many of our bee-keeping friends are also interested in carp culture, we shall give some sketches of the new book from time to time. Below are a couple of pictures. The first one is intended to help answer the question as to how large we may expect carp to grow

HOW LARGE DO CARP GROW?

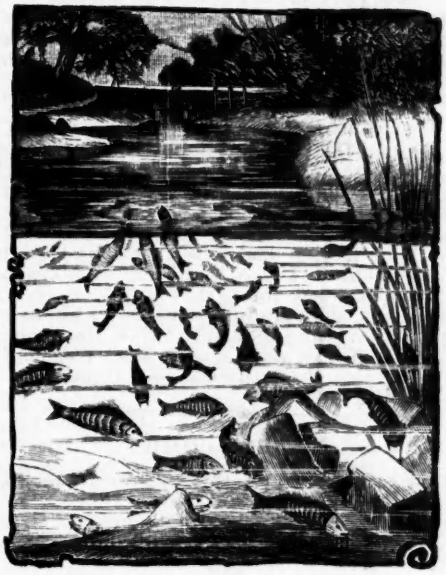
The individual in the picture is supposed to answer the question something as follows: "Well, I can not say, friends, just how large they might grow in time; but this fellow is probably one of the first I put into my pond when I first started." The question now arises, "How old is the man in the picture? and is this picture supposed to represent about 1890, '95, or 1900?"

The only authority I have for saying that fish reach the size shown in the cut is the following from George Finley, author of "The German, or European Carp."

"This fish grows for many years, and to wonderful proportions. It has been captured in the Danube weighing sixty-seven pounds; and it is said that it has been taken in Lake Como weighing two hundred pounds; but the latter looks a little 'fishy' and is referred to only because read of somewhere. But that this fish grows to fifty and sixty and even seventy pounds weight, and lives over a century, is so well authenticated as to be generally believed."

Now, perhaps a good many who have carp-ponds full of carp have never had a view of the way the fish behave themselves under water; and the following sketch is intended to show it as well as I have been able to gather from their behavior while in our pond, and in a reservoir in the central part of our greenhouse.

Perhaps every one who owns a greenhouse may not know that carp make beautiful pets, to be kept in a reservoir or tank in the central part of the house, during the winter time. They very soon get to be so tame as to feed from your hand, and nibble your fingers; and for variety you may have a few gold-fish with them. They get along



FISH-LIFE UNDER WATER.

very nicely together; and as they swim about and amuse themselves, occasionally sticking their heads above the surface of the water, their actions very much resemble the cut above.

UNFINISHED SECTIONS, VERSUS SECTIONS OF FOUNDATION.

TO WHAT EXTENT CAN UNFINISHED SECTIONS BE USED IN SUPERS WITH PROFIT?

I AM a producer of comb honey, and have had some experience with unfinished sections. I partly agree with Mr. J. A. Green in his second drawback. It is a good deal of trouble to keep them free from dust and mice; but when we have them it will by no means pay to melt them up. I don't think I would burn sections that have been used once (unless badly soiled), but I would save them for home use. Every producer of comb honey will find out, as I have, that it does not pay to fill the cases full of these unfinished sections. Last year I had hives side by side, one filled with unfinished sections and one with fdn. starters, and the ones with fdn. will almost invariably be finished first. We should manage to have as few as possible at the end of the honey-harvest. But when we have them they come very handy to start the bees to work in the sections at the beginning of the honey-flow by putting three or four in each case, but not any more than that.

HOW LONG WILL A SWARM REMAIN CLUSTERED ON THE LIMB FROM DATE OF SWARMING?

One of my colonies swarmed July 4th, and remained on the limb till September 12th. There was no comb built there, as I thought there would be.

MY REPORT.

I commenced in the spring with 40 colonies, increased to 45 by swarming, and got, on an average, 15 lbs. per hive. We had a light flow of honey the first of September, and my bees made enough to carry them through winter. This honey had a very bad odor, and could be smelled some distance from the apiary. Will it do any harm as a winter food? This has been the poorest season since I have kept bees. Most of the bees in these parts are kept by farmers, in box hives, and will starve this winter.

J. E HENDERSON.

Roney's Point, W. Va., Oct. 24, 1887.

Friend H., your statement is astounding. Of course, the bees didn't carry enough honey in their sacks to last them five or six weeks, so they must have gathered honey and passed it around from mouth to mouth, without having had enough at any time to build combs. I have seen small clusters exist in this way for perhaps a week or ten days, but they gradually scattered about or got lost. I am inclined to think your honey will do no harm as winter feed, especially that which was gathered in September.

EMPTY COMBS.

How to Fill Them with Syrup or Honey, for Feeding Bees.

C. C. MILLER MAKES IT SO PLAIN THAT EVEN A CHILD MAY UNDERSTAND IT.

IN GLEANINGS for June 1, 1886, page 463, you say that Dr. C. C. Miller, in his new book, says that, when he has a colony to be fed, he does it by filling empty combs with syrup, in a manner similar to that given by our old friend Quinby, years ago. Now, will you please tell me, either in a letter or through GLEANINGS, how they manage to get the syrup into the empty combs, and oblige? I have tried to do it, and failed. I suppose it is all easy enough when we know how. N. L. GERRISH.

Nottingham Center, N. H., Oct. 14, 1887.

Dr. Miller replies:—

If you lay an empty comb flat upon a table, and pour a liquid on it, instead of the liquid immediately running into the cells it will lie contentedly upon the surface. If the liquid fall from a considerable height, so as to strike hard upon the surface, some of it will force its way into the cells; so if you pour syrup upon the comb out of a pitcher, holding the pitcher 3 or 4 feet above the comb, you will succeed better than if the pitcher be held only a few inches above the comb. Even then, if a portion of the syrup falls in a compact mass upon an empty cell it can enter the cell only by displacing the air contained therein; and if the syrup presses with equal force over all parts of the mouth of the cell there is no chance for the air to get out, and the cell remains empty. In other words, if a drop larger in diameter than the cell falls centrally upon the cell, the chances are that it will simply act as a cork to cork up the air that is in the cell; but if the drop be so small that it strikes nowhere upon the sides of the cell, there is nothing to hinder it from going directly to the bottom of the cell; and if it strikes upon one side of the cell it will still make fair progress bottomward. So the smaller drops we can have as it falls, the better success we shall have; and to this end, instead of a pitcher we will take a watering-can from which to pour the syrup. But thick syrup will not readily pass through the rose of a watering-can, so we must have thin syrup; and as we desire syrup (at least in the fall) no thinner than can be made by using 5 lbs. of sugar to one quart of water, we must thin it by using it hot, taking care not to have it hotter than about 125°, as beyond this there is danger of making the combs so soft that they will give away. So now I think we have reached the essentials: We lay our comb flat upon the kitchen-table, and pour upon it from a height of several feet, through the rose of a watering-can, syrup heated to 125°. Whoever fulfills these conditions will, I think, make no failure in filling his combs. He will, however, not leave the table or the floor of the kitchen in the best condition; and any further effort needed is simply to prevent waste and muss, unless it be to make the work lighter. To this end, get a tin box made about two feet deep, about half an inch or an inch longer than the top-bar of your brood-frames, and about an inch wider than the outside depth of the frames. It will cost a little less to have made a wooden box of the above dimensions, without top or bottom, and then place it in a tin pan three or four inches deep, and large enough to contain the box. In either case, in one of the lower corners of the tin box (or of the pan) a hole should be made with a spout, say an inch in diameter and about three or four inches long, through which the waste syrup can pass to be caught in a pail or other vessel standing under the spout. Of course, the whole affair must be elevated sufficiently to admit of the pail standing under the spout; and the operator, if necessary, can stand on a box to make him high enough. Now take an old tin quart fruit-can, hold it upside down over a very hot stove or fire till the solder melts so the top can be easily knocked off. Then with a 2¼-inch No. 12 wire nail, or a punch of the same size, punch holes in the bottom of the can. Punch the holes from the inside, so the projections shall be outside. Make a row of holes around the outer edge, about ¾ of an inch apart; ¾ of an inch inside of this another row, then inside of this again, filling up the bottom with holes about ¾ of an inch apart. Near the upper edge, punch two holes on opposite sides, and into one of these holes pass a piece of wire about a foot long, fastening together the two ends by twisting, then serve the other hole the same way. Tie one end of a string into each of the wires, and tie the other ends of the strings into two nails or staples in the ceiling, five or six feet apart. Let the can be hung about three feet above the bottom of the tin box, and let the strings hang crosswise (not lengthwise) of the box. Put a comb in the bottom of the box, then pour a dipper of syrup rather rapidly into the can, and with the left hand keep moving the can so as to fill all parts of the comb; turn the comb over, fill the other side, raise the comb and let it drain a few seconds, then put it into a super, or hive without a bottom, to slowly drain off. It is, of course, well to have a pan, sufficiently large underneath to catch the drip, and the combs may be tiered up five or six high. If you don't want your clothes unnecessarily daubed when stooping to lift the frames,

slip the can into the dipper and hold it out of the way. To prevent the holes in the can from becoming frequently clogged, put in the top of the can a little wire strainer, such as are used for straining herbs. C. C. MILLER.

Marengo, Ill.

BEE-STING POISON AS A REMEDIAL AGENT.

ITS USES AND EFFECTS ON THE HUMAN SYSTEM.

IN GLEANINGS for June 1, 1886, page 456, you say: "Now have the friends who buy the poison-sacks (of the honey-bee) been aware of the curative properties of the remedy for croup and similar diseases?" I hope, before you again revise the A B C of Bee Culture you will fully acquaint yourself with all the uses that are made of the honey-bee. If you will step into the office of some of the physicians of Medina and call for Herring's Revised Materia Medica, and look at page 92, you will, I trust, feel that your time has been well spent. Please pardon this suggestion, as I took it for granted that you are ignorant, allow me to say negligently ignorant, of the many uses that the poison of the honey-bee is made use of in sickness. The poison of the honey-bee, *Apium virus*, and *Apis mellifica*, can always be found in the office of more than ten thousand physicians in the United States, and ranks with the most precious remedies.

If many bees be placed in a wide-mouthed vial, well shaken, and drenched with five times their own weight of dilute alcohol, we have a preparation known as *Apis mellifica*. If we press the poison from the honey-bee on to a piece of sugar or into a vial, we then have a preparation known as *Apium virus*. By triturating the poison-sacks in mortar, with sugar or sugar of milk, we have the same; viz., *Apium virus*. But any of the preparations above named are still too dangerous to be used until further diluted. By careful experiments it is found that there are about forty distinct abnormal symptoms set up after repeated doses of bee-poison taken internally. Some of the symptoms become dangerous if the use of the poison be long continued, especially the moral and mental symptoms growing out of the continued use and increased dose of the poison. How many of the readers of GLEANINGS would desire to undergo the mental and nervous suffering which father Langstroth underwent from the effects of too much bee-poison in his system? The symptoms related by father Langstroth correspond with the provings of *Apis mellifica*, made and published by Dr. Constantine Herring, fifty years ago. I will not mention the numerous diseases that bee-poison is used in, but will say, in answer to the editor's inquiry, that we know that bee-poison is good in croup as well as in asthma. I will add, that the continued use of bee-poison internally will greatly increase the fear of death. Those of us who handle bees much, standing and working over open hives, inhaling the odor of the bee-hive, should not be surprised if we have some queer symptoms, though we may not be much stung by them. I mean by this, that it is my belief that inhaling the odor of bees is poison to some people. I know of no remedy that is a sure cure or a palliative for the sting of the honey-bee. I have noticed, that when I have applied iodine or aqua ammonia to the place where stung, and either of the remedies applied cause considerable pain, that the swelling would be less. There are, without doubt, many drugs that would neutralize the poison of a bee-sting, if the remedy could be forced down into the puncture made by the shaft of the bee, to the furthest depth where the poison was deposited. I suppose that many of the readers of GLEANINGS have felt pain in decayed teeth immediately after having been stung. I have experienced this feeling many times after being stung on the finger. J. W. PORTER, M. D.

Ponca, Nebr., Sept. 27, 1887.

Friend P., we have consulted the book you mention, and thank you for directing us to it. It is true, the poison of the bee-sting is recommended for a great number of diseases, as you say; but the matter as we found it in the book is hardly suitable for a bee-journal, on account of technicalities, etc. I believe, however, that it is little used by allopathic doctors. If the odor from the poison inhaled in handling bees is detrimental to some people, it ought, if I am correct, to be beneficial to some other people. We have had pretty good evidence that it is valuable in certain cases of rheumatism. Now, inasmuch as a great many people have been improved in their general health by engaging in bee culture, may it not be they need just this corrective you mention? I do not know that I ever experienced any pain in a decayed tooth by being stung on some other part of the body; but I remember distinctly being surprised to find a clear and distinct pain located somewhere quite remote from where the sting was inflicted.

UNFINISHED SECTIONS IN THE FALL.

WHAT TO DO WITH THEM, AND HOW TO KILL TWO BIRDS, ETC.

FRIEND ROOT:—This is one of the queries to which I have given much study, and have experimented in different ways. It is a very dauby, unpleasant job to extract a thousand or more sections; and unless they are set back upon the hives to be cleaned up by the bees they are all stuck up with granulated honey in the spring, which the bees can not use and do not like to clean up; in fact, I would rather have a section of good fresh foundation than such a dauby one.

The next worse thing I have found is to place these unfinished sections back on the hives in the spring, just as they are taken off in the fall. As some of the honey has soured, some of the cells are granulated solid. Some of the combs are cracked, as the result of frost and cold. All things considered, I think it one of the most discouraging and disagreeable tasks we can impose upon the bees.

By accident I discovered that the changing or moving of sections in the fall had a tendency to cause bees to carry the honey below. I caught on to the hint, and now have no trouble in making them carry it all below, when and where I want it, leaving the sections in the best possible condition for another season. As I am usually very busy, I try as often as possible to "kill two birds with one stone," so I take off my last honey, and, as far as possible, prepare my bees for winter at the same time as follows: Commencing at the first hive in the first row, I remove the surplus crates and

zinc honey-board, examine the brood-nest to see if they need stores, and how much: if none, they are then provided with the chaff cushion and are ready for winter.

The crates of sections are then taken to the honey-house and emptied; the salable ones are put away, and the rest that contain honey are uncapped and set back in the crate. Those containing no honey are crated up by themselves, and put away for another season. The process is continued all through the apiary, with this exception: Whenever I find a colony lacking in stores they are given enough of these unfinished uncapped sections to make up the deficiency, and I have never failed to have it all carried down, and the combs left bright and clean as new dollars, and in readiness for another season. It is a little slow and tedious; but when you get through you have a big job off your hands, all at one effort. I find you may leave the sections on untouched until December, and the bees will not carry the honey down—many of them not even the uncapped ones; but by removing, as I suggest, they will not only remove the honey from those you uncap, but from all the rest; and I venture the assertion, that at this writing there is not a pound of honey in unfinished sections in my apiary; and a glance at the beautiful bright combs would convince any one that they are too valuable to melt up and burn. GEO. E. HILTON.

Fremont, Mich., Oct. 25, 1887.

Friend H., you have given us an excellent suggestion, any way; and since you mention it, I wonder your plan has not been thought of and used before. May be it has. Even if it is tedious, it is worth something to me to know that my implements and materials for next season's work are all nice and clean, and put away in good order. I feel a good deal as my wife does when I urge her to come down to the garden or carp-pond, without waiting to wash up the supper-dishes. She says, "How in the world can I enjoy myself, and have a good time, when I know that the supper-table is all in disorder?"

THE COMBINATION SYSTEM.

SOME IMPORTANT FACTS AND NOVEL SUGGESTIONS FROM J. A. GREEN.

ALL bee-keepers know that bees will begin work sooner on empty combs than when they are obliged to build. This is particularly the case when the honey-flow begins gradually. Very often, colonies provided with combs will make quite a show in the surplus apartment before those obliged to build their combs have made a start. It is of great importance that they should begin to put honey in the surplus apartment at the very first of the honey season. They seem to work better afterward when their first honey goes above; and they are not nearly so likely to fill the brood-combs with honey, and so crowd out the queen.

To get the bees started above as soon as possible, I have for several years placed, on a few of the hives which I intended to run for comb honey, a set of extracting-combs. As soon as the bees were well at work in these combs they were taken away from them, and sections put on, in which the bees went to work readily. The combs were piled up on hives to be run for extracted honey.

As the honey-yield drew near its close in the fall, instead of putting new sections on comb-honey hives, all sections were taken from a part, and extracting-combs given them. The unfinished sections were placed on other hives to be finished.

As I said, I have practiced this to some extent for several years; but it was not until within the past two years, when I began to use zinc honey-boards, that I realized that by their use it was possible to carry out the principle into a complete working system. Some experiments with shallow combs helped me to come to this conclusion.

In brief, then, my combination system for producing comb and extracted honey is this: Place a set of extracting-combs over each colony at the beginning of the honey season. For several reasons it is better that they should be shallow—say six inches deep. Have a queen-excluding honey-board between these combs and the brood-chamber. As soon as the bees are well at work storing honey, remove the combs from about five-sixths of the hives, more or less, and substitute sections, piling the cases of partly filled combs over the remaining hives. The colonies over which these combs are placed are to ripen the honey and finish filling them. Italians are best for this work.

Toward the close of the season, reverse this process. Take all the sections away from a part of your colonies, replacing them with combs and making other bees complete partly finished sections instead of giving them new ones.

The advantages of this system are: First, getting the bees started, without loss of time, at the beginning of the season. Second, producing a superior article of extracted honey. Third, getting rid of a large part of the annoyance and expense of unfinished sections in the fall.

With regard to the second advantage, while it is perhaps possible to ripen honey artificially so as to produce a good article, I am firmly persuaded that, in general practice, the bees can do it better and cheaper than we can. I think there is no way by which a really good article of extracted honey can be produced as cheaply as by giving the bees plenty of room to store it, and then plenty of time to ripen it.

Now let me answer in advance some of the objections that may be made to the system:

It might be said, that it is too much bother, too much manipulation. With hives that are adapted to it, the manipulations are simple and require little time. All surplus cases, whether for comb or extracted honey, should be easily and quickly interchangeable. You are sure the queen is in the brood-chamber, where she belongs. A few shakes will remove nearly all the bees. If desired, the cases may be placed under a tent or in a screen-house until all have left them, though I have never found that the few bees remaining did any harm. Remember, all this work is done when honey is coming in.

Will not the change from combs to sections make the bees swarm? All I can say to this is, that my bees do not do so. Even if it should have that effect, I am not sure that it would be any disadvantage. The swarms would come early, and it is from early swarms, properly managed, that we get the most honey. Try it and report. J. A. GREEN.

Dayton, Ill., Oct. 24, 1887.

Friend G., I do not know that I ever before heard the idea suggested, of starting the bees first on a set of combs in the upper story; and without having tried it, it seems to me it is at least, in some respects, wasteful to have the bees suddenly stop after they are well going. You know, when the tiering-up process first came out everybody was telling what a saving it was, compared to taking a set of sections right away and making the bees commence on a new set. Different writers suggested that probably the bees got disappointed, for sometimes they would not start a new set at all, even when they had been working heavily with the old ones. By putting an empty case under the one nearly filled, however, they passed right through to their old one, and kept on at work. Now, if we use the shallow frames for extracting, why not raise up this set of shallow frames and leave them on the hive until they start in the one containing the sections? Heddon's shallow brood-frames would work nicely in this way, I should suppose.—Your plan of lessening the number of unfinished sections at the close of the season is certainly a very desirable one.—In regard to getting nice extracted honey by letting the bees do their own ripening with a large number of combs, it accords exactly with my own experience; and the honey was beautifully ripened when I had three Simplicity hives full of combs standing over the brood-chamber.

A GOOD REPORT FROM TEXAS.

12,000 LBS. OF HONEY FROM 154 COLONIES, IN SPITE OF THE POOR SEASON.

THIS has been a poor season for honey in this part of Texas. I had 154 colonies (in two apiaries) to start with, and increased to 179 colonies, and took about 12,000 lbs. of honey. This is about half an average crop for my location. The cause of the failure was winter and spring drought. We had scarcely any rain for 22 months, previous to the 15th of last May. As our best honey-flow is in May, the rain came too late to do much good in the way of making surplus honey. My bees are in better condition than at this time last year. They are strong, and have one or two thousand pounds of honey—more than they will need to winter on, if the spring is as early as usual.

THE DISTANCE BEES FLY, AND WHAT RACE OF BEES FLY THE FURTHEST.

I see in a late number of GLEANINGS that some of the fraternity do not think bees will fly very far for stores. I have had some experience in that line, and will give it for what it is worth. In the first place, my apiary and the Pafford & Edwards apiary are about 8 miles apart, and the bees always work as strong half way between the two apiaries as they do near home. These apiaries were started in 1883 with black bees, and have been Italianized since; and when we knew there were no other Italians in the county we have found them working five miles from home. The black bees are hardly ever found over one and one-half miles from the hive here.

There has been a sharp flow of honey from a species of sage this week, none of it nearer than two miles of my apiary. The bees all went in one direction, and in such numbers that a neighbor and myself started on their trail to see what they were working at. About a quarter of a mile from home we met a lady who told us that a swarm of bees passed over her house, going the way that we were. It was the bees going to work, and we followed them and found the nearest ones two miles from home. I am as well satisfied that they went five miles as if I had followed that far and seen them at work. The prospect for a big crop of honey next year is good. We have had good rains this fall; and with one or two winter rains, the crop will be almost a sure thing. D. M. EDWARDS.

Uvalde, Texas, Oct. 19, 1887.

Friend E., your report is indeed refreshing after having had so many poor ones this season. I am glad to know that you have enthusiasm enough to follow the bees, and see where the honey comes from.

PREPARING FOR WINTER.

E. FRANCE'S METHOD.

BETWEEN the 1st and the 15th of September we inspected all of our apiaries, to find out if they were all in good condition to winter. We have been having some fall flowers in most of the places where our bees are located, and, as a result, we found five of the six apiaries with plenty of honey to winter on. One apiary we fed 300 lbs. of honey. We use the pepper-box feeder, quart size, putting two feeders on a colony at once, which will be six pounds of feed. Usually they are emptied in 24 hours. A few colonies will take another day. We like those feeders the best of any. We have a honey-board ⅞ inch thick, over each colony, with two 1½-inch holes through them, over which we place the feeders. The bees come up through the holes in the honey-boards, and take the feed down into the hive. The feeders are never in the way of the bees. They don't need to be taken off as soon as empty, as they are not in the hive but on it, and don't in any way interfere with the working of the bees inside of the hive. Of course, we have an outside cover to our hives, under which the feeders are put. No outside bees can get at the feed unless they go into the entrance of the hive, which they are not allowed to do. We can feed any time of the day, no matter whether the bees are flying or not, and no robbing will be started in consequence. The year 1885 we fed 6000 lbs. of honey through the last of August and first of September. One yard of 100 colonies we fed 1800 lbs. at 3 feeds, giving each colony two feeders at a time. If the bees are flying we put up our extracting house, or tent, in which we fill our feeders, then take them in a box, 12 at a time, and set them on the hives under the top cover. If we have fed before, and there are empty feeders on the hives, we exchange the empty feeders for full ones, taking the empty ones back to the tent to be filled. We can open one of our quadruple-hive covers, exchange feeders, and close in half a minute, so there is no time for outside bees to steal. We carry our feed in kegs holding 160 lbs. Each keg has a large faucet, or honey-gate, with which our work is facilitated. One man fills while another puts on or exchanges. When we have got around, all being fed in that yard, we pick up our traps and go home.

We usually ascertain if there is feeding to be done, by the last of August or first of September, when we feed immediately if necessary all that we

propose to do. At that time there are usually a few fall flowers for the bees to work on, so the bees don't crowd after honey very bad.

Our bees are now in very good condition. They are strong, and have plenty of honey. In all there are about 500 colonies; or, more exactly, 514. Two or three in each yard are queenless, but I don't know positively just how many, so we call it 500. How comes it that there are so many queenless? We seldom look over all our bees after we finish extracting, which usually is about from the 10th to the 20th of July. This year we went over all the last of July, to see if all had good queens. In every hive where there was no laying queen, we put in one or more combs of young brood and eggs, that the bees might raise a queen if they had none; but after all, there will be some failures. I don't know but that the king-birds have had something to do about it, by catching the young queens when they are out to meet the drones.

QUEENLESSNESS, AND HOW IT MAY SOMETIMES BE DETECTED WITHOUT OPENING THE HIVE.

Just now very few hives have any brood at all, or eggs; but I can generally tell if the bees are out on the wing pretty lively whether there are any queenless colonies, by walking over the yard and noting the actions of the bees, especially at this time of year. There will be but few bees in a queenless hive, and a good share of them will be about the entrance, keeping guard, very few flying off. Open the hive and very likely the first thing we notice is a lot of drones and a few bees. Those drones have no business in so weak a colony, if they had a good queen. What do we do with a queenless colony? If discovered before the first of September, give them some good brood-combs, some of them containing eggs. But if queenless at this time of year, we don't do any thing with them. What few bees there are will take care of the combs until the weather is too cool for the worms to make much headway on the combs. If the combs contain considerable honey they could be used to fill out some other colony that was short of honey. We generally leave them as they are, and let the other bees take the honey when they find it. Doesn't that set the robbers at work on other colonies? Not with us, strange as it may appear. We always let our bees clean out the honey in any hive that has lost its bees from any cause, and I never thought that there were any bad results. In fact, we can not very well help it. The most of our bees are several miles from home, and we seldom see them after the extracting is done, until we fix them up for winter. After they are in winter trim we don't see them until warm days in March. We aim to have plenty of honey in the hives to last them until they can gather in the spring. A little too much honey is better than not enough. If any colonies die in the winter, the other bees take care of the honey during the warm days in the spring. Then if a swarm deserts its hive in the spring, the other bees are sure to take the honey that is left, and very quickly too. Now, in the last case if it is seen by the apiarist that the bees are engaged in carrying out the honey, which is best, to take the honey away and put it where the bees can not get at it, or let the bees finish it up where it is, I think the safest plan is to let it alone. If we take the honey away, the bees will crowd into other hives, and may overpower them and carry off their honey, when, if we had let the bees work on the honey until they had finished it, they would keep on looking for more in the same place. Finding none they would quit.

FRANCE'S METHOD OF ASCERTAINING THE AMOUNT OF STORES.

How do we know that the bees have enough honey to winter? Do we weigh it? Do we open every hive to find out? No, we don't do either. We don't want to open hives late if we can help it. We go to a yard, and, no matter how many there are there, we scarcely ever open over ten colonies. If we find those ten all have, in our opinion, plenty of honey (we guess by the looks of the combs) then we decide that that yard will do, and don't open any more, as all have had the same chance. But if we should find a doubtful one, then we would open more. We don't take the combs out. We turn back half of the top cover over on to the other half, then pry up the two honey-boards that are uncovered. Now, if the sun shines we can, by smoking the bees down, see all we want to without parting the combs. But if we can not see how much honey they have, without parting the combs, then we part them, and sometimes we lift out some of the combs, to make sure that we know just how they are off for winter stores. We always look into the last new colonies made during the season. If any are short of stores they are most likely to be the ones.

"SATISFED IF THEY GET THERE."

I find in reading over our bee-papers that no two of us will work just alike. Each has his own style or way to manage his bees and do his work. We are something like a lot of farmers going to market, each taking a different road, but all leading to the same place. There may not be much difference in the roads; they are all satisfied if they get there. Each man knows his own road, and if there are any bad places on it he learns how to get over them easily. Another man would have more or less bother. So it is with the bee-men—each has drifted into his own channel, and he can work there better than anywhere else. Every man has a way of his own. But we can learn very much of each other, in a general way. We can even profit by another's mistakes. I read all I can get in relation to bee culture. Every little while I find something I can adopt that will help me along. I don't know that my scratching will help any one very much; but it may some of the beginners; and the veterans can profit, perhaps, by my mistakes. E. FRANCE.

Platteville, Wis.

Friend F., I have been in the habit of detecting queenless colonies in very much the same way you indicate; and after one has practiced he can judge pretty unerringly by simply seeing the bees around the entrance. Your method of ascertaining the amount of stores required is also about as we do it; but one who has not had practice might be very likely to make an expensive blunder. Your plan of leaving colonies where the bees have died out, to be taken care of by neighboring stocks, is recommended by some, I know—Dr. Miller, I believe, among them; but I do not believe it well for any but a veteran to let the bees go ahead in cleaning out even a hive containing no bees. It seems to me it is a bad plan to work on. Your concluding remark, about the different ways we have of working, is a great truth, and it should teach us to have charity one for another.

WHAT TO DO, AND HOW TO BE HAPPY WHILE DOING IT.

Continued from Oct. 15.

CHAPTER XLII.

Give, and it shall be given unto you.—LUKE 6:38.

In Chapter XXXIX. I told you something about God's gifts—the gifts he was sending me day by day. Well, since giving me that spring, that still holds out during all these dry spells, of more than 100 barrels of water per day (when we have use for it), he has given me many other valuable gifts. One of them is a great lot of muck, leaves, sand, and rotten wood that I found in the bottom of our carp-pond. This accumulation of ages was one of the obstacles toward getting our pond so that it would hold water; and at first I felt almost disappointed when I saw the expense it was going to require to scoop it out and get clear down to hardpan. When I found, however, that this accumulation was a very valuable compost, I could not think of it except in the line of a gift. We have hauled out considerably over a hundred loads and put it around our raspberries, and there is a good deal to come out yet. The leaves and vegetable matter have doubtless been accumulating in this cavity for years; and the eccentricities of Champion Brook had, at some remote time, buried them up. Well, I can not very well share *these* gifts with you, my readers. It is true, we have been furnishing the spring water to the friends around town during the drought; but this great bed of muck I can not very well share with anybody, even if I were so disposed. But God has given me some other gifts that I *can* share with you, and I greatly enjoy the pleasure of doing it. These gifts are some inventions I have recently made. Our text says, "Give, and it shall be given unto you;" and it has always seemed to me that these great gifts come all the faster when we are busily engaged in giving them to our fellow-men. This verifies the promise in our text, you see: "Give, and it shall be given unto you."

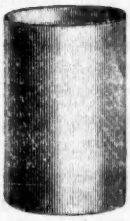
My first invention is a little implement wherewith we can transplant any sort of a plant tree, herb, or flower, at any season of the year, without any possibility of injury. Of course, such arrangements have been used heretofore, but I think none so simple and easy as this one.

A NEW ERA IN TRANSPLANTING.

May be this invention of mine might be he means of bringing me a good deal of money, if money were the object; but I think I shall enjoy ever so much more seeing you assisted by it, than I should be by making money out of it. In the first place, you are to go to a tin-shop and ask them for the very heaviest sheets of 14 x 20 tin they have. In our tin-shop, every little while they come across a sheet of IX tin, too heavy to work, and it is pitched to one side. When I made my invention I found that they had quite a lot of such sheets they had no particular use for. I directed one of the boys to set the squaring-shears so as to cut a sheet of tin into six equal pieces. The dotted lines in the diagram show where he made these cuts.

HOW TO CUT THE SHEET OF TIN.

Now, these pieces will be 10 inches long by 4½ inches wide, or perhaps a fraction more. Make a bend on each end of each piece, the same as for locking together a cup or pail; then roll the piece up and lock the ends together (no soldering is necessary), so as to make the tin tube here shown.



TIN TUBE FOR TRANSPLANTING.

This completes our machinery. Before we go to work, however, we want a hundred or more of these little tubes, depending upon the amount of transplanting we have to do. Stand your tubes in wooden trays, or transplanting-boxes, such as are shown in Chapter XI.—transplanting-boxes for seedlings. Set these boxes of tubes on a wheelbarrow, and go where your plants are. We will suppose that it is strawberries you want to take up. Gather up the leaves of your young plants and slip the tube over them, adjusting it so the crown is as near as possible in the center of the tube. Now set your foot squarely on the tube, and force the tube into the soil, say half its depth; then pick the tube up and set it back in your tray.

Go on to the next one, until you have a wheelbarrow-load of "potted plants." Yes, my friends, and they are just the nicest *potted plants* you ever saw in your life; and you can take them up and pitch them into the wheelbarrow, all in a heap, without any possibility of injury, either to the roots or foliage. The operation of forcing the tube into the ground cuts off the runners, so you have not even that to bother you. When you have got a load, run the wheelbarrow into the field where you are going to set your plants out. If the soil is as soft and mellow as it ought to be, you can scoop out the soil with your hands and set the tubes in half their depth, almost as fast as you can crawl along on your hands and knees. You don't need any firming, or any thing of that sort, for the plant stands just where it did originally. The roots are all spread out just as they grew; and the same dirt the plant was feeding from before you moved it, will feed it in its new location. In fact, the plants are just as well off as when in the old bed, and they are not crowded a bit. There is plenty of sun and air all around them, and not a weed to bother.

Well, we had got that far with our invention several months ago; but the difficulty of getting the plants out of the tin tube was what troubled us. We tried having a tube that would unhook, but that was a bungling operation. If the soil was loose, it let the ball of earth break and rattle off from the roots. Besides, the whole thing was ricketty. You may be surprised a little to think I studied hard and long for a remedy, and that, when it was found, it was so simple there was hardly any need of making any fuss about it. Simple as it was, it made us send up a shout when we hit it. Well, the plan to get them out is simply this: Put a half or a whole teacupful of water in the top of every tube. We tried this at first; but Fred, who was helping me, said it would not work.

"Look here, Fred; try filling twenty or thirty of them with water; and when you have got the last one filled, go back to the first and see if it won't come out."

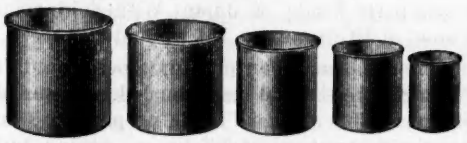
He took hold of the tin and pulled just a little, and it slid out just as easily as you might expect a chunk of butter to slip out if the can had been warmed. In fact, the plant, in its surrounding soil, was in a state of mud, and therefore slid right out. There it stood, the earth saturated with water, and nicely mulched with dry earth all around it. The operation of transplanting, instead of checking its growth, really gave the plant new life. When your tubes are all picked up, pitch them into the wheelbarrow and go after another load.

You may say this arrangement can not entirely take the place of potted plants, for it can be applied only to bringing them from one part of the farm to another, or, say, from a neighbor who lives not more than four or five miles away. I have thought of this. The plants could be shipped in the tubes just as well as they ship potted plants in pots, providing the purchaser would pay for the tubes; or they can be slipped out and put in paper bags, or rolled up in a bit of paper, as they do potted plants, but you can not then get them into the ground quite as nicely as where you have the tins.

Every time I use these tubes I am surprised as well as pleased. They do the work perfectly, and we never had any sort of transplanting done so rapidly as we do it with these things. The size I have given is especially for strawberries, raspberries (where the plants are small), celery, cabbage, cauliflower, lettuce, and tomatoes. The especial advantage of this arrangement is, that you take enough good rich soil along with the plant to give it quite a start toward making a crop. It is not very expensive, you know, to make the plant-bed very rich. You can rake into it a heavy dose of fine old stable manure, and that at no very great expense. You can also, if you choose, add guano and bone-dust, so as to make it the very best kind of soil to push things into a magnificent growth. Now, when you take up your plants, you take along enough of this rich compost to almost make sure of a moderate crop, even if the ground you put them in is not up to the very highest notch. You may say the plants must stand very evenly, and at just such a distance apart in the plant-bed; to which I reply, we have found that it is by no means necessary. Transplanted plants are, of course, much the best for this or any other purpose; but during the past few months we have been taking lettuce-plants right from the seed-bed down in the fields, and setting them in the greenhouse. While in the seed-bed, they stood so thickly that forcing down the tin tube once would take away from three or four to a dozen plants. Well, we have found this, in place of being a detriment, gives the very nicest lettuce. Set your tube with three or four plants in it, or more, in the bed in the greenhouse, and then place others so as to be from six to eight inches apart, as you may decide. The plants in

the seed-bed were in a crowded state. The effect of putting them in the greenhouse, where the outside ones, at least, have plenty of room, is to make each little cluster of plants roll over and shoot out at each side, like a bunch of flowers in a bouquet, and the ground is soon apparently covered. When they begin to crowd, pull out the largest plants, and the others will, in a remarkably short time, push out leaves to fill up the space thus vacated, so you may get a continuous crop of nice lettuce right along, without making any fresh sowings. I think very fine celery and tomato plants—yes, and cabbage-plants—could be produced by this same process; and the labor of transplanting is nothing compared to the old way. In fact, you handle from a half to one dozen plants, where you formerly handled one; and there is something about the arrangement that seems to encourage the plants wonderfully, in starting right away to fill up the new space given them. Why, it seems to me this little arrangement is going to make a complete revolution in furnishing vegetable-plants for sale; that is, in furnishing transplanted plants. The labor of transplanting (in the old way) is so great that a good many have given it up, and fill orders for plants with the long tap-rooted spindling ones, just as they come from the seed-bed. By this new process, however, getting the plants out of the seed-bed into the new one, where there is plenty of room, is so quickly done it is scarcely any expense at all; and the best part of it is, the dirt is never completely removed from the roots. They are transplanted without being taken from the soil, and without stopping their growth at all. You can experiment on it during the winter, if you choose, with house-plants and with flowers; and a little later in the season, with early cabbage-plants.

Now, then, for the application of this device on a larger scale. You know it is a very difficult matter to transplant cucumbers. In the cut below we show you a nest of different sizes of these transplanting-tubes.



A NEST OF TRANSPLANTING-TUBES.

These large ones we have made of galvanized iron, with a stout wire around the top, so they are not easily bent or bruised by stepping on top of them. If you want to take up a hill of melons or cucumbers, or a little tree, you will need to take one of the tubes, say from six inches to a foot across, according to the size of the tree or hill. Plant both feet on the stout wire, and settle it down by stamping one foot at a time. If the soil is mellow, your weight will probably sink the tube as far as need be. With very light soil, you may need a spade or shovel to push under the tube. If the tubes are deep enough, however, as shown in the cut, this is seldom if ever necessary. Have a place previously dug, to put the tree or hill; set the tube in, then level up the dirt nicely around it. Now you are ready to draw the shovel. Pour in the water, give it time to soak into the earth containing the tube, so as to make it all soft mud; slip out your tubes, nest them up in your wheelbarrow, and go for another load. The same arrangement can doubtless be applied to pretty good-sized trees. The nature of the soil would probably have something to do with it.

The great point in this invention is the facility with which we can spread crowded plants so as to give them room and air, and do it at the same time without stopping the growth, or interfering with the plants in the way that ordinary transplanting does. The nearest approach to it has been the arrangement for getting strawberries by potting. This has every advantage of potted plants, and nothing like the expense. The tubes are not nearly as frail as pots; and as they can be used so many times, they are not as expensive. You do not have to go along and place your plants in a pot, and mark it with a stone, as heretofore; nor do you have to wait a week or two for the runners to get the pots full of roots. You go into any strawberry-field, and get the plants you want, and that is the end of it. If your tin tubes are used with any sort of care, they will last for years. The cost of the material ought not to exceed a cent each. The cost of making should not be nearly a cent apiece. Our workmen will make them in quantities at the rate of one a minute.

There is still another use for these transplanting-tubes. In many towns it is customary to sell tomato, cabbage, celery, cauliflower, and pepper plants, etc., half a dozen or a dozen in a little box, the purchaser to take the box—dirt, plants, and all. Sometimes berry-boxes are used; and as they are the cheapest receptacle we can probably find for the plants, they are, perhaps, the best thing; but to plant seeds in these box-

es, filled with soil, and care for them until they are fit to sell, is a great deal of trouble, as you may know, if you have tried it. Besides, the plants do not have the bushy roots that transplanting gives. The very cheapest way of raising plants is to sow the seed broadcast in a seed-bed, for you can water and care for a great number at once. Well, raise your plants in just this way: When they have got so large that they are just a little crowded, push your tube over half a dozen or a dozen. Set it in the berry-box and put your fine compost all around it, in the corners, etc.; slip out your tin, and there you have it. Pint boxes will do nicely for five plants, and the quart boxes for ten, and you can sell them by the half-dozen or dozen, if you still prefer to stick to the old plan of selling by the dozen instead of by tens. Now, as the plants cost but little you can afford to put in one or two extra—say seven or eight plants, and call it a half-dozen. This will be charging enough for the smallest; and this way of doing business always pleases, as you may know. If these boxes are set close together, they can be watered and cared for with almost as little trouble as in the seed-bed. If the plants get so large they crowd before you sell them, separate the boxes three or four inches apart, then fill in between them with some soft peaty soil that will hold moisture nicely. Put them out in front, where everybody who passes along the street will see them, and you will have no trouble in making sales. If the plants are nice, you should get five cents for a pint box, and ten cents for a quart box. You may say this is not really furnishing transplanted plants. Well, this may be the case in regard to those in the central part of the berry-box; but if they are tolerably thick in the seed-beds, you can fill out the central ones, and leave a half-dozen in a circle, near the edge of where the transplanting-tube slipped down. This will give you the nice strong vigorous roots we so much want. The larger size of tube would probably be better for the quart boxes.

MARKET GARDENING DURING A SEVERE DROUGHT.

You will remember, that in Chapter XXXVII. I spoke of the prices we were getting for many kinds of produce during this season of drought. Well, we have had an experience that we never had before. It seems that cabbages have been scarce, and hard to raise, everywhere; in fact, I have not seen a nice head of cabbage this season at all—no, not even in our large cities. They are small and soft. On our own grounds we had some nice cabbages, but they were of small size. They were the Jersey Wakefield. In fact, our best ones were those raised so early in the spring that nobody else thought of having any. We thought then that 5 cts. a pound was a good price; but during the drought in August we actually sold all the cabbages we could scrape up, for 10 cts. a pound. Just think of it! a dollar for a single head of cabbage! We didn't have any that we got a dollar for, it is true; but real nice hard crisp ten-pound heads of Jersey Wakefields, such as we had in abundance a year ago, would have brought a dollar each, without any trouble whatever. I do not suppose there were any who would have given us a dollar right out for one head of cabbage; but by cutting them into quarters we could easily have retailed a good many at 10 cts. a pound. A year ago last spring, by cutting a ten-pound head into quarters we sold it so as to get 30 cts. for it, and we thought that was wonderful. This year farmers came in from the country and wanted cabbages. We told them the price was 5 cts. a pound; but they replied that it did not make any difference—they must have them. Now, it has been my opinion that, by preparing the soil properly, and irrigating with judgment and wisdom, we could have raised ten-pound cabbages during this great drought; but some way or other we didn't succeed in doing it. Sometimes I was tempted to think that there was some mysterious agency at work to prevent the cabbage and turnip tribe from amounting to any thing; for our ruta-baga turnips acted just as contrary as the cabbages did. The strangest part of it was, they did not get any good cabbages in regions where they had plenty of rain this year—at least, that was the case to some extent. Now, at 10 cts. a pound we could raise cabbages in a greenhouse, and make it pay well; that is, if they would head up under glass; and I am just now very curious to know if such a thing has ever been done. We could sell nice little heads of Jersey Wakefield, even now, at 10 cts. a pound if we had them.

Last season, when our tomatoes wouldn't bring more than 50 cts. a bushel, we canned them. This year we made preparations to run our canning establishment again; but to our great surprise, Mr. Weed informed us that we could get *two dollars a bushel* for all the real nice tomatoes we could scrape up. It may be interesting, however, to

notice the way we did it. We took some clean new half-peck baskets out into the field, and picked the very nicest specimens, good sized, round and smooth. Then we gave good plump measure—heaping the baskets up well. The baskets were so nice and clean, and the fruit so handsome, that nobody hesitated to pay 25 cts. for a basketful. The crooked specimens, or those that were not so handsome, were put into peck baskets, and these were sold for 40 cts.; but the *little* baskets went off faster than the others.

I believe we had tomatoes from about the first of July until the first of November; and we have a few in one of our greenhouses, even now. I have no idea of how many tomatoes we sold; but for a long time we had some eight or ten bushels a day. I tell you, it is fun to have a rousing crop when there is no opposition. At one time when it seemed unlikely we could sell all of our tomatoes in our town, I suggested to the boys that they go a mile or two out into the country, stopping at farmhouses. As they ran the wagon only in the forenoon, they could make these extra outside trips in the afternoon, and they did tiptop. We sold tomatoes at almost every farmhouse, as well as other things. Several trips were made to neighboring towns, within several miles, and they did fairly well on these trips.

Our favorite tomato this year, as last, has been the Mikado. It is true, the fruit is not all perfectly round and smooth; but it is so much larger than any other kinds, and so early, it gives us the most money. There is no question but that we are in great need of seeds saved from these finest specimens of the Mikado; and to start the matter we saved enough ourselves to make perhaps a quarter of a pound of this choice seed, selected from the best specimens. It is a pretty hard matter to take your very largest, finest, and most beautiful tomato early in the season, when they command a good price, and sacrifice it for the seed it contains; but when you do it, you have got some seed that will probably be worth something. In fact, I should dislike to take a five-dollar bill for that quarter of a pound, judging from our experience in tomatoes this last season. Now, although almost everybody else complained that they could not raise tomatoes, we had an enormous crop, without a bit of trouble whatever. While tomatoes were rotting for everybody else, ours did not rot a particle; and as they were on that creek bottom that I have told you about, they suffered comparatively little from drought. There is one thing I did that may have counted something in our favor respecting freedom from rot. Quite early in the season, great whopping tomato-worms made their appearance; and they came in such numbers all at once that I directed one of the boys to make it his business to go clear through all of our tomatoes daily, and carefully pick off every worm. The first morning, he got, I think, a couple of quarts of these great horrid-looking creatures. The next morning he got about a quart, and so it was for so long a time that I began to think there was no such thing as getting them *all*. Finally, just before the tomatoes came into bearing, the worms became scarcer and scarcer; and when we gathered our fruit there was almost not a worm.

CHAPTER XLIII.

The high hills are a refuge for the wild goats, and the rocks for the conies.—PSALM 104:18.

The above text came to mind in connection with the matter of providing comfortable quarters for our fowls during the winter-time. Although many times the fowls seem to prefer to roost in the trees, I am quite sure they gladly avail themselves of a refuge when it is convenient for them. It has always seemed to me as if the most comfortable place for them would be inside of the hills; and since I have been studying springs and rocks, the matter has come back to me more and more. We don't all have hills, however; and the question suggested itself of making a nice little hill, or mound, and having it grassed over. Where rocks are convenient, no doubt one of the nicest places in the world, not only for fowls, but for their nests, would be in the recesses of these rocks. Our friends in Kentucky, in the region of Mammoth Cave, ought to be happy in the facilities offered them, not only for warm retreats for domestic animals under ground, but I think I should like a house in a cave—that is, providing I could get plenty of sunshine into the cave as well.

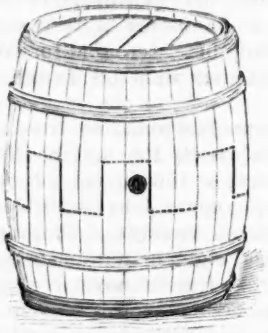
I presume many of you have been deterred from keeping poultry, on account of the

expense of warm and comfortable houses. Quite an intelligent lady, who is a teacher in one of our schools, said she would be tempted to go into the poultry-business considerably, if it were not for the expense of suitable buildings for them during the winter; and I have been thinking of the matter for some time. The result of it is, I verily believe, another of those gifts I have been telling you about, and here it is:

A WINTER POULTRY-HOUSE FOR 50 CTS. IN MONEY, AND HALF A DAY IN TIME.

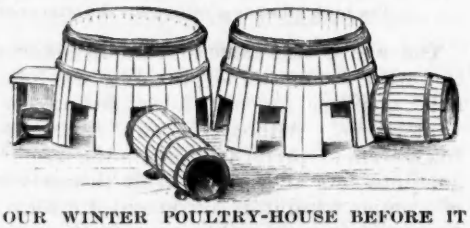
I have now actually in use a poultry-house containing a roosting-apartment, or bedroom, as the children call it; an eating, or dining room, as they have it, and a laying-apartment, or egg-depository. Yes, and we have a room specially for nice drinking-water. This poultry-house is, at the same time, so made that little if any frost gets into any of these different apartments, and yet the expense of the materials is less than half a dollar; and the time required to make it should not exceed half a day. The above sounds like a patent-right advertisement, does it not? Well, it is not any thing that I have to sell. It is to give away, and I am feeling happy this morning to think that God has given it to me to give to you. Would some of my juvenile friends like to make one? All right, boys. Come with me and I will tell you all about it.

Go to your nearest grocery or dry-goods store, and purchase the largest hogshead you can find. Such a one as merchants often get crockery in is just the thing, only it wants to be large—the larger the better. It does not matter whether it has any heads or not; in fact, it is better without them, for you would have to throw them away if you got them. You ought not to pay over 25 cts. for such a hogshead, and may be you can get one for less than that. Now, while you are about it, ask him for two empty nail-kegs. These, also, are to be without top or bottom. You want also a barrel without top or bottom. Any kind of one will do that will not fall to pieces. You next want a box big enough to set over a common wooden pail. This box, also, is to have both top and bottom taken out. You now want to get these materials moved to some place where the soil is soft and mellow. If you raise celery, make the hen-house on the celery ground, after the celery has been dug for the winter. The location should slope a little toward the south. If it does not do so naturally, you can make it do so. If you can have it protected from the north and west winds by buildings, trees, orchards, or something of that kind, all the better. Commence with your hogshead first. With a coarse saw, with a good deal of set in it, you are to saw the hogshead in halves, in the manner shown in the cut below.



HOW TO CUT THE HOGSHEAD IN TWO.

I think I would saw off the staves a little higher up above the bung-hole than the engraver has marked it; then the next two a little lower. But it depends somewhat on the size of your hogshead. If you can get a foot below the bung-hole and a foot above it each time, it will make your apartments a little higher. Saw straight across two staves (three if they are narrow) at once; and by the time you cut a little into the staves on the sides which are not to be cut off, you can probably get the point of your saw through between the two that are to be cut. In this way you can get through them pretty rapidly. When your hogshead is in two pieces, dig down to where the ground is tolerably hard, and level it off so it will slope a little to the south. Throw the soft loose dirt out of the way, in the form of a circle, until you have room to plant your utensils, as in the cut below.



OUR WINTER POULTRY-HOUSE BEFORE IT IS COVERED WITH DRY EARTH.

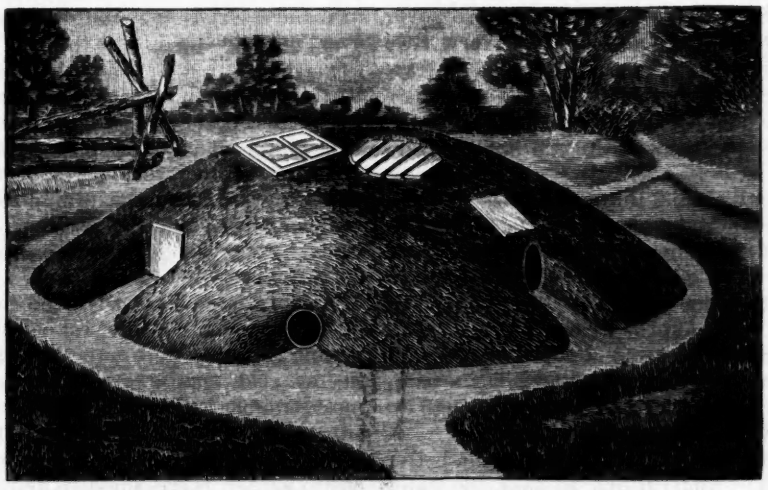
In the picture the engraver did not get the two halves of the hogshead placed together just as I meant to have it. The two halves should be so placed that two doors face each other, making an opening from one to the other. The right-hand tub is the roosting-

apartment, and you want to nail some cleats on so the roosts can be laid across from one side to the other. You can put in two roosting-poles, or three, according to the size of your hogshead or the size of your fowls. If you have Brahmas, two roosting-poles will probably be as many as are needed: if Leghorns, you can put in three very well.

The barrel on the right-hand side is the nest-room. Some leaves or straw inside of it makes the nest. The two nail-kegs facing us are for entrances. We need two, because this opening is seldom or never closed; and we want a good big heap of dry earth over it, so the frost won't get in very far. On the left is our box containing the water-pail. This, also, is to be banked well with soft fine soil; all the other openings are to be closed with bits of boards or shingles, or whatever is handy. Now pack straw around over the whole arrangement, between the tubs, and anywhere that dirt might be likely to sift through. Then get your spades and shovels, and pitch on the dirt. You want to get it on nicely, and in such a way as to look, when finished, like the picture below.

the end of the barrel, and held fast by a stone or some other arrangement. Of course, you gather the eggs from this opening. The entrance to the box containing the water-pail is fixed in a similar way when the weather is very cold. The dining-room is to be covered with any old window-sash you can pick up. As the ground slopes a little to the south, the tops of the tubs will slope to the south enough to carry off water.

In the center of the dining-room is the dining-table. It is a funny sort of table, however, for it is made of a round tin can, high enough up so rats and mice can not jump into it. You can sink it into the ground a little, if you want it tall enough to hold a good supply of feed. Into this dining-table (or dining-can, if you choose) you are to put oats, corn, wheat, buckwheat, if you have it, culled beans, boiled until they are soft, scraps from the table, and as much of a variety as you can afford for the occupants. To make the dining-room pleasant, you want nice things on the table. I wonder if the boys and girls have ever discovered this fact. Perhaps you have found



OUR WINTER POULTRY-HOUSE THAT DOES NOT COST OVER A DOLLAR.

Now, please notice, you must dig down all around until you get at least six inches below the floor of the house inside; then let the entrance slope downward, so no wind or water will be running into it. The opening to the egg-apartment, also, should slant downward for the same reason. When the weather is so very cold there is great danger of the eggs freezing, you can have a chaff cushion put into this opening. The board that lies right over it is to be placed against

out already that my plan of feeding fowls is to leave feed right by them, all the time. I do like to see plump-looking "biddies;" and when I catch a young rooster, to be prepared for dinner (so he will be nice when we get home from Sunday-school on Sunday afternoon), I want one that is not all skin and bones, and my plan of feeding fills the bill exactly; and I think the best way to make hens lay is to give them plenty to eat; that is, while they have unlimited

range. Well, the engraver has not shown a very good roof over the roosting-apartment. It does very well for hot summer nights; but when there comes a rain, I think there had better be a board over each crack in that roof. If our engraver were obliged to stay in there during a rain, I think he would be in favor of the latter plan. But, how about the effect of the rain on our dry dirt? Well, you must sow grass-seed, so as to make a turf that will turn rain; but as you can not have that turf this winter, I think I would pile straw over the whole arrangement, laying something on top to keep it from blowing away, and raking it down so it will shed rain like a roof. You want to make a hole down to the sash, so as to let the sun down, when it shines, for this is the only way of lighting the establishment we have.

If the straw is not convenient, get a piece of oil-cloth or enamel cloth—some old piece will answer—large enough to cover the whole institution. Spread it over nicely, then cut out a hole where the tops of both of our tubs go, and tack the oil-cloth to the upper edge of the tubs. This will keep the earth dry; and if you have fine dry soil over them all winter long, there is very little probability that frost will get in. A straw mat, such as is used by market-gardeners, could be kept over the sash and roof to the roosting-apartment during the most severe weather.

The path around the domicile is to serve both the purpose of a path, and a ditch to carry off the water. Be sure the water can all get away. Fowls don't like to walk in water; they don't like to walk in mud when the sun thaws out the frost, either, as I have discovered. On this account I think I would put sand or sawdust all over the path. Be sure there are passageways enough to let the water out of the path quickly. If your ground does not slope enough, better have some underdrains to take the water away. They will pay on any garden or dooryard, aside from the benefit to the poultry-house. How do you get inside? Why, if you want to get into the dining-room, take off the sash and jump down. Don't set your great awkward feet on the dining-table, but step to one side of it. You can fill your water-pail while standing in here, instead of taking the board away and filling it outside, if you choose. You can also scrape out the accumulations of manure in the dining-room while you are standing there. To clean out the bed-room, just lay the boards over on top of the sash; reach down and lift out the roosting-poles, and then you can clean out all accumulation, and put in some fresh dry dust and peat from the swamp, or whatever else you choose.

As we want to climb on top of the house frequently, I think I would have a post set in the north bank, to put your foot on when you step over on the edge of the tubs. We have had just such a poultry-house in operation for three or four weeks, and I tell you it is fun to see the fowls run out and in. During these frosty days they will put out over the grounds when the sun shines; but when a sharp wind comes up, or a cloud comes over the sun, and it gets cold, they will flop their wings and come back home, and run in as if that is the way chickens always do. How many fowls? Why, it depends on the size of your hogshead, and the breed of fowls, as I told you. We have seven full-grown fowls in ours, and a Brahma hen with ten young chickens. It would please you to see the chickens put out when the weather is cold. They will scamper over the celery-ridges, and take quite a run over across the field until they get cold, and then they will flop their wings and hurry back into the dining-room. These chickens were hatched in October, but I feel sure they will winter nicely with this arrangement; and they will require no care or attention at all, except to keep the dining-room table well supplied, and the water-pail replenished. That they like their quarters, is evident from the fact there is quite a jealousy if any of the other fowls come near it. I built it principally to get rid of some enterprising hens that were determined to scratch in my cold frames and plant-beds. The most troublesome of these so quickly assumed ownership of the new quarters, that, when I brought my Brahma hen and chickens to winter there, she disputed the territory at once. I came on the ground just in time to act as peace-maker. I found my poor biddy, that is so much given to scratching, with her head covered with blood, and the blood was running down to the end of her bill, so it came very near stopping her from breathing. I took her off to one side, and talked to her about the sinfulness of such behavior. She meditated quite a spell, and now she lets that old hen and chickens go where they please, and accepts her position—a sadder and probably a *wiser hen*.

To be continued.

ANOTHER BEE-MOTH.

AND ONE NOT DESTRUCTIVE TO COMBS.

ON the 12th of August last, Mr. J. H. Martin, Hartford, N. Y., sent me by mail, in a good strong box, some comb which contained several larvæ of some moth. He stated that these larvæ were quite abundant on his unused combs, but said they did no harm—indeed, he thought them a benefit, as the combs which were peopled by them were undisturbed by the common bee-moth, which, as all know, is really to be dreaded, as it mutilates the combs quite seriously. He asked for name, habits, etc., and wished, if of general interest, that information be given through the bee-papers.

August 20 I visited the apiary of my brother at Owosso, Mich., and found that he had been considerably troubled by the same insects. They were numerous on the combs; and though they did not mutilate the combs, they did spin their silken cords all over it, and drop their fecal pellets in the cells in a way that would not make the combs very pleasant to the bees. My brother also found the two insects, this small one and the larger well-known bee-moth, *Galleria cereana*, working side by side. Some of these were carefully placed in a breeding-bottle, and now I have the moth. We conclude, then, that eggs may be laid in July or August, the larva found at work in August, September, and October, and the moths found from October till spring. There is, doubtless, a spring brood.

The insect proves to be *Ephestia interpunctella*, Hubner, or *Tinia zeæ*, Fitch. Riley, in his 9th Missouri Report, p. 31, refers to this insect as *Ephestia zeæ*, and calls it a wax-feeding larva. Lintner, in his 1st Report, speaks of *Ephestia interpunctella* as the cabbage-moth. The same author, in his entomological contributions, speaks of *Ephestia interpunctella* as existing in both Patagonia and the United States. In Vol. VII., p. 23, Ontario Entomological Society, this insect, under the name *Ephestia zeæ*, is referred to as introduced by the grain exhibits at the Centenial Exposition at Philadelphia.

Dr. Fitch, in his second N. Y. Report, p. 320, describes this moth in all its stages. He was not aware that it had been previously described by Hubner, and so called it *Tinea zeæ*. He speaks of it as feeding on flour, and as especially common in stale Indian meal. Dr. Fitch also gives a good figure of the moth. This author concludes, that the moth might exclaim with Barlow, in his hasty-pudding:

"All my bones were made of Indian corn. Delicious grain!"

Dr. Fitch also calls attention to the fact that this insect, like the larva of the grain-moth, *Tinea granella*, fills the substance on which it feeds, with a web.

The correct name of this moth is *Ephestia interpunctella*. As it has never had a common name, so far as I know, I would propose that of lesser bee-moth. I have heard of it so generally this summer from several besides the two persons already referred to, that I think it is quite partial to honey-comb, or rather to what is stored in the cells of the comb. It feeds on the pollen in the cells, and injures the comb only by its web and filth, which I think would soon be cleaned out by a good vigorous colony of bees.

DESCRIPTION.

The full-grown larva, in general color and size, see Fig. 1, resembles the apple, or codling moth larva, very much. It is about ⅝ of an inch long, and pink in color. The head is brown, with darker jaws and lateral edges. It bears a few light-colored hairs. The dorsal shield of the first thoracic segment is also brown, with about ⅓ of its area on each side much darker than the central third. This shield is crossed by a central dorsal light-colored line which passes on to the head, when it soon forks and extends to the base of each jaw. It also bears a few white hairs. Below this shield on each side, just in front of the spiracle, is a piliferous dark spot. Six rows of similar spots extend the entire length of the larva. The six spots divide the dorsal portion of each segment into nearly equal parts, though the dorsal space is a little broader. The lower spots on the thoracic segments are in front of the spiracles; on the other segments, below them. On the third from the last segment, the middle of the three spots is larger, and has a central white spot. The two dorsal spots run together on the two last rings in most of the larvæ. The under side of the body is light-colored.

The pupa is formed in a slight cocoon of light-colored silk in the cells of the comb. Very likely, if not confined it would leave the comb and seek some crevice or other concealed position. It is $\frac{3}{10}$ of an inch long, and of the usual form and color.

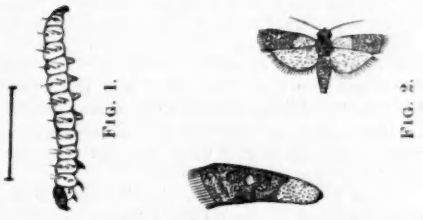


Fig. 1. Fig. 2.

EPHESTIA INTERPUNCTELLA—LARVA AND MOTH.

The imago, Fig. 2, or mature insect, is a pretty little moth, and is accurately represented as to size, form, and markings, by the figure. It is ½ an inch long, and expands ⅞ of an inch. The base of the primary, or front wings, is straw color, while the opposite ends for something more than one-half their length have brown and dark scales intermingled, so the color is brownish purple. The brown prevails almost exclusively at a small central area, forming a brown spot. Two less distinct brownish spots are seen just back of this spot near the internal margin, the inner one being the larger. Two indistinct brownish lines extend parallel with the outer margin of these wings. The outer margin is fringed with dark gray. The posterior, or secondary wings, are light-colored, with a satin-like reflection, and broadly fringed with the same color. The thorax and abdomen are colored like the secondary wings, except that there are more dark scales, which slightly shades the color. The eyes are black; the head and antennæ dark gray, with a distinct bluish reflection.

These moths, like the common, or old bee-moth, *Galleria cereana*, Fab., belong to the family *Pyralidæ*, or snout moths. They are so named because of their projecting palpi, which, as they reach out in front of the head, look not unlike a snout or nose. These palpi are marked features of all moths and butterflies, or, as we may say, of all lepidoptera. They are the mouth organs that usually curl up be-

range. Well, the engraver has not shown a very good roof over the roosting-apartment. It does very well for hot summer nights; but when there comes a rain, I think there had better be a board over each crack in that roof. If our engraver were obliged to stay in there during a rain, I think he would be in favor of the latter plan. But, how about the effect of the rain on our dry dirt? Well, you must sow grass-seed, so as to make a turf that will turn rain; but as you can not have that turf this winter, I think I would pile straw over the whole arrangement, laying something on top to keep it from blowing away, and raking it down so it will shed rain like a roof. You want to make a hole down to the sash, so as to let the sun down, when it shines, for this is the only way of lighting the establishment we have.

If the straw is not convenient, get a piece of oil-cloth or enamel cloth—some old piece will answer—large enough to cover the whole institution. Spread it over nicely, then cut out a hole where the tops of both of our tubs go, and tack the oil-cloth to the upper edge of the tubs. This will keep the earth dry; and if you have fine dry soil over them all winter long, there is very little probability that frost will get in. A straw mat, such as is used by market-gardeners, could be kept over the sash and roof to the roosting-apartment during the most severe weather.

The path around the domicile is to serve both the purpose of a path, and a ditch to carry off the water. Be sure the water can all get away. Fowls don't like to walk in water; they don't like to walk in mud when the sun thaws out the frost, either, as I have discovered. On this account I think I would put sand or sawdust all over the path. Be sure there are passageways enough to let the water out of the path quickly. If your ground does not slope enough, better have some underdrains to take the water away. They will pay on any garden or dooryard, aside from the benefit to the poultry-house. How do you get inside? Why, if you want to get into the dining-room, take off the sash and jump down. Don't set your great awkward feet on the dining-table, but step to one side of it. You can fill your water-pail while standing in here, instead of taking the board away and filling it outside, if you choose. You can also scrape out the accumulations of manure in the dining-room while you are standing there. To clean out the bed-room, just lay the boards over on top of the sash; reach down and lift out the roosting-poles, and then you can clean out all accumulation, and put in some fresh dry dust and peat from the swamp, or whatever else you choose.

As we want to climb on top of the house frequently, I think I would have a post set in the north bank, to put your foot on when you step over on the edge of the tubs. We have had just such a poultry-house in operation for three or four weeks, and I tell you it is fun to see the fowls run out and in. During these frosty days they will put out over the grounds when the sun shines; but when a sharp wind comes up, or a cloud comes over the sun, and it gets cold, they will flop their wings and come back home, and run in as if that is the way chickens always do. How many fowls? Why, it depends on the size of your hogshead, and the breed of fowls, as I told you. We have seven full-grown fowls in ours, and a Brahma hen with ten young chickens. It would please you to see the chickens put out when the weather is cold. They will scamper over the celery-ridges, and take quite a run over across the field until they get cold, and then they will flop their wings and hurry back into the dining-room. These chickens were hatched in October, but I feel sure they will winter nicely with this arrangement; and they will require no care or attention at all, except to keep the dining-room table well supplied, and the water-pail replenished. That they like their quarters, is evident from the fact there is quite a jealousy if any of the other fowls come near it. I built it principally to get rid of some enterprising hens that were determined to scratch in my cold frames and plant-beds. The most troublesome of these so quickly assumed ownership of the new quarters, that, when I brought my Brahma hen and chickens to winter there, she disputed the territory at once. I came on the ground just in time to act as peace-maker. I found my poor biddy, that is so much given to scratching, with her head covered with blood, and the blood was running down to the end of her bill, so it came very near stopping her from breathing. I took her off to one side, and talked to her about the sinfulness of such behavior. She meditated quite a spell, and now she lets that old hen and chickens go where they please, and accepts her position—a sadder and probably a *wiser hen*.

To be continued.

ANOTHER BEE-MOTH.

AND ONE NOT DESTRUCTIVE TO COMBS.

ON the 12th of August last, Mr. J. H. Martin, Hartford, N. Y., sent me by mail, in a good strong box, some comb which contained several larvæ of some moth. He stated that these larvæ were quite abundant on his unused combs, but said they did no harm—indeed, he thought them a benefit, as the combs which were peopled by them were undisturbed by the common bee-moth, which, as all know, is really to be dreaded, as it mutilates the combs quite seriously. He asked for name, habits, etc., and wished, if of general interest, that information be given through the bee-papers.

August 20 I visited the apiary of my brother at Owosso, Mich., and found that he had been considerably troubled by the same insects. They were numerous on the combs; and though they did not mutilate the combs, they did spin their silken cords all over it, and drop their fecal pellets in the cells in a way that would not make the combs very pleasant to the bees. My brother also found the two insects, this small one and the larger well-known bee-moth, *Galleria cereana*, working side by side. Some of these were carefully placed in a breeding-bottle, and now I have the moth. We conclude, then, that eggs may be laid in July or August, the larva found at work in August, September, and October, and the moths found from October till spring. There is, doubtless, a spring brood.

The insect proves to be *Ephestia interpunctella*, Hubner, or *Tinia zeæ*, Fitch. Riley, in his 9th Missouri Report, p. 31, refers to this insect as *Ephestia zeæ*, and calls it a wax-feeding larva. Lintner, in his 1st Report, speaks of *Ephestia interpunctella* as the cabbage-moth. The same author, in his entomological contributions, speaks of *Ephestia interpunctella* as existing in both Patagonia and the United States. In Vol. VII., p. 23, Ontario Entomological Society, this insect, under the name *Ephestia zeæ*, is referred to as introduced by the grain exhibits at the Centenial Exposition at Philadelphia.

Dr. Fitch, in his second N. Y. Report, p. 320, describes this moth in all its stages. He was not aware that it had been previously described by Hubner, and so called it *Tinea zeæ*. He speaks of it as feeding on flour, and as especially common in stale Indian meal. Dr. Fitch also gives a good figure of the moth. This author concludes, that the moth might exclaim with Barlow, in his hasty-pudding:

"All my bones were made of Indian corn. Delicious grain!"

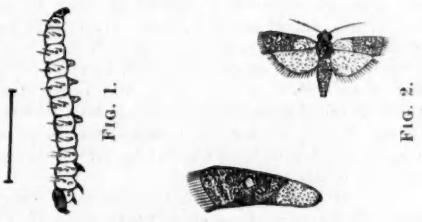
Dr. Fitch also calls attention to the fact that this insect, like the larva of the grain-moth, *Tinea granella*, fills the substance on which it feeds, with a web.

The correct name of this moth is *Ephestia interpunctella*. As it has never had a common name, so far as I know, I would propose that of lesser bee-moth. I have heard of it so generally this summer from several besides the two persons already referred to, that I think it is quite partial to honey-comb, or rather to what is stored in the cells of the comb. It feeds on the pollen in the cells, and injures the comb only by its web and filth, which I think would soon be cleaned out by a good vigorous colony of bees.

DESCRIPTION.

The full-grown larva, in general color and size, see Fig. 1, resembles the apple, or codling moth larva, very much. It is about ⅝ of an inch long, and pink in color. The head is brown, with darker jaws and lateral edges. It bears a few light-colored hairs. The dorsal shield of the first thoracic segment is also brown, with about ⅓ of its area on each side much darker than the central third. This shield is crossed by a central dorsal light-colored line which passes on to the head, when it soon forks and extends to the base of each jaw. It also bears a few white hairs. Below this shield on each side, just in front of the spiracle, is a piliferous dark spot. Six rows of similar spots extend the entire length of the larva. The six spots divide the dorsal portion of each segment into nearly equal parts, though the dorsal space is a little broader. The lower spots on the thoracic segments are in front of the spiracles; on the other segments, below them. On the third from the last segment, the middle of the three spots is larger, and has a central white spot. The two dorsal spots run together on the two last rings in most of the larvæ. The under side of the body is light-colored.

The pupa is formed in a slight cocoon of light-colored silk in the cells of the comb. Very likely, if not confined it would leave the comb and seek some crevice or other concealed position. It is ⅜ of an inch long, and of the usual form and color.



EPHESTIA INTERPUNCTELLA—LARVA AND MOTH.

The imago, Fig. 2, or mature insect, is a pretty little moth, and is accurately represented as to size, form, and markings, by the figure. It is ½ an inch long, and expands ⅞ of an inch. The base of the primary, or front wings, is straw color, while the opposite ends for something more than one-half their length have brown and dark scales intermingled, so the color is brownish purple. The brown prevails almost exclusively at a small central area, forming a brown spot. Two less distinct brownish spots are seen just back of this spot near the internal margin, the inner one being the larger. Two indistinct brownish lines extend parallel with the outer margin of these wings. The outer margin is fringed with dark gray. The posterior, or secondary wings, are light-colored, with a satin-like reflection, and broadly fringed with the same color. The thorax and abdomen are colored like the secondary wings, except that there are more dark scales, which slightly shades the color. The eyes are black; the head and antennæ dark gray, with a distinct bluish reflection.

These moths, like the common, or old bee-moth, *Galleria cereana*, Fab., belong to the family *Pyralidæ*, or snout moths. They are so named because of their projecting palpi, which, as they reach out in front of the head, look not unlike a snout or nose. These palpi are marked features of all moths and butterflies, or, as we may say, of all lepidoptera. They are the mouth organs that usually curl up be-

side the tongue or maxillæ, of such insects, reminding us somewhat of whiskers. In these pyralids they project forward instead of curling up.

As already stated, these insects feed only upon the bee-bread, or pollen, and will probably do little harm. They will become more and more common, and will attract most attention after hard winters, when unused combs lie thick about the apiary.

Agricultural College, Mich. A. J. COOK.

MR. COWAN.

FOUL BROOD, AND HOW SUCCESSFULLY CURED.

I HAVE frequently read with interest and profit the communications of Mr. Cowan. That you can not speak more highly of him than he deserves, I am well assured, and I should like to meet and have a chat with both yourself and him, as I feel that you are both in some way friends of mine, though I have never had the happiness of meeting either of you. I have to acknowledge a debt of gratitude to the A B C of Bee Culture, though I was first led to keep bees and take an interest in them by getting hold of "The Manual of Bee-Keeping," by the late John Hunter. I have experienced all the vicissitudes which an inexperienced hand naturally will go through, from spring dwindling to foul brood. The last I remember, I treated with a strong hand. Having five or six colonies infected, I shook the bees from the combs into empty hives, burned all the comb, brood, honey, boiled the frames, and washed the hives with a strong solution of salicylic acid, a little of which I fed to the bees with the syrup, and never had any trace of the disease afterward. It was introduced by my buying an old-fashioned straw hive which was infected, and from which I transferred the bees (not the comb) to a frame hive.

I should now like to ask a question: Is February here too early to commence feeding bees? I used to begin in England (my father lived at the time in Norwich, Norfolk, close to which place he has his parish) about the end of February, and feed gently till the honey began to come in. I am aware, that feeding is, so to say, a science, and I fear to stimulate the bees too early. In Texas I used your Simplicity hives, which I found admirably adapted to that climate. Here I should prefer the chaff hive, as my bees will have to winter outside. I always used a feeder made from some large-mouthed bottle (that French plums come in), piercing about twelve holes in the zinc lid. Then I had a square block of wood with a circular hole in it, covered with zinc on one side, the zinc in the wood having a long slit in it. This I placed over a hole in the cloth covering the frames, filled the bottle with syrup, put on the lid, reversed it, and set it in the hole in the wooden block. By simply turning the bottle round I could feed one or twelve holes, as I liked.

Montrose, N. Y., Oct. 22, 1887. J. S. CUMMING.

In regard to feeding the bees in February, friend C., I am not satisfied in my own mind whether it will pay or not; that is, when we have a February so mild that we can start the bees to rearing brood by feeding. My last experiments in that line were rather to the effect that it is risky and doubtful to feed in February, or March either. As our seasons run, I should say that here in the States we had better wait until April. Perhaps it would be well to have this question in the Question-Box.

REPORTS ENCOURAGING.

JUST BOOMING.

MY bees are booming. I extracted over 200 lbs. yesterday. I got 21 gallons from six colonies. I have a good many sections on, full of honey, and most of them capped over. I am reducing all my Simplicity hives by contracting the brood-chamber to seven frames. I tried five this season, and I find they work in sections, when other hives, just as strong in bees, that have 10 frames, will not. I put a swarm in one T-frame hive about June 1st, and have taken off 48 1-lb. boxes, and it has 24 1-lb. boxes on now, full of honey, and nearly all capped over. A second swarm from the same hive the above came from has made 48 lbs. I lost all my bees last spring while I was sick, but 19. I have 28 now in good condition, and I have sold six swarms.

J. W. MARTIN.

Greenwood Depot, Va., Oct. 12, 1887.

THE BEST HONEY YEAR IN FIVE, FOR TEXAS.

From 12 hives in spring I now have 25 hives in good fix for winter. During the season I extracted 1750 lbs. of good honey. This is the first honey year in five for this part of Texas. J. N. HUNTER.

Leonard, Texas, Oct. 31, 1887.

IN GOOD CONDITION FOR WINTER.

My bees have done very poorly this year. However, they gathered fall honey and reared bees, so that they are in fine condition for wintering. Last winter I lost 9 out of 23. I have 27 now to winter. I get 12 cts. per lb. for extracted honey, and can sell all I can get. M. MAPES.

Monroe, N. Y., Oct. 21, 1887.

2695 LBS. OF HONEY.

My report for 1887 is as follows: Spring count, 83 colonies; extracted honey, 2325 lbs.; comb honey, 370 lbs. They increased to 103 colonies, and I doubled them down to 75, and fed them about 500 lbs. of old honey to get them in shape for winter. The season has been very poor here, as it has been too wet for the bees to gather much honey.

Parksville, N. Y., Oct. 28, 1887. A. W. SMITH.

A POOR SEASON, BUT THE BEES PAID EXPENSES.

This season has been a poor one. I did not get more than one-fourth of a crop. I started with 38, spring count, and increased to 60 by natural swarming. I have taken 800 lbs. of comb honey and about 100 lbs. of extracted. The comb honey was all in one-pound sections, and two-thirds of it goldenrod. We had a good honey-flow here from the 1st to the 10th of September, and that is what saved us from buying sugar to winter our bees. My bees have paid expenses this season; and taking the demand and the price of honey at present into consideration, with the prospect good for fair prices next season, I am not discouraged the least bit.

Linkville, Ind., Oct. 19, 1887. JOHN KUNZ.

AN INCREASE OF 33 PER CENT, AND ABOUT 45 LBS. OF SURPLUS TO THE COLONY.

Although the season has been very dry with us in Canada (just dry enough to show the great superiority of Italians over the blacks), bees have done fairly, 29 of them giving me about 33 per cent of increase, and from 45 to 50 lbs. of surplus extracted honey to the stock, spring count. At date all are in

fair shape for winter. My loss last winter was very heavy—57 out of 94. F. P. CLARE.

Oliver's Ferry, Ont., Can., Oct. 20, 1887.

REPORTS DISCOURAGING.

THE POOREST SEASON FOR BEES.

THIS year has been the poorest for bees that I have experienced since I have been engaged in the business. I started in the spring with 80 colonies in good condition, and increased to 115 by artificial swarming. I did not have any natural swarming. I moved about half of them to a place within reach of basswood pasture, and took 700 lbs. of basswood honey. They filled up in good shape for winter, while those in my home apiary had to be fed. GEORGE BRIGGS.

New Sharon, Iowa, Oct. 23, 1887.

NO SURPLUS.

Bees have done poorly the past summer. Only one swarm from 21 came through the winter in good shape. No surplus honey, and it is evident that I must feed or unite some of the swarms in order to take them through the winter.

Waynesville, O. G. S. SALE.

A REPORT DISCOURAGING FROM ARKANSAS.

This has proved to be a poor country for bees. Honey comes with a rush three times a year, with intervals of great scarcity, during which bees diminish in numbers; and when honey comes there are not enough bees, so they raise a quantity of brood, fill the lower story, then the flow ceases, and I get none. I have not eaten a spoonful since here. Perhaps I should do better if I fed liberally in those intervals of scarcity. A. LAFOREST.

Fayetteville, Ark., Oct. 6, 1887.

HEADS OF GRAIN

FROM DIFFERENT FIELDS.

IS IT HONEY-DEW?

WE are rejoicing over a good season which came last week. It has brought out the fall blooms, and bees are working lively. They are gathering more honey now, as late as it is, than they gathered in any one same length of time this summer. They don't seem to work much on the blooms—mostly in the tops of large timber. I took the pains to examine the timber, in order to see what they were working on, and I find that there is any amount of small white tender-looking balls, from the size of a bird's egg to the size of an apple; and from these balls there runs a nectar closely resembling pure honey, and there is an immense quantity of these balls all over the forest, which is affording a splendid flow of rather dark honey; but it is well flavored, and in the center of these tender balls are pods, wherein is deposited a small white worm, or grub, which appears perfectly lifeless. What will this small white worm produce when fully developed?

This has been the poorest season for honey here for several years, or, at least, since I have been handling bees on frames. Bees did not average 20 lbs. of honey per colony, and good strong colonies were, ten days ago, in almost a starving condition. I have been feeding my bees until this present flow of honey; and if it lasts eight or ten days longer, bees will not need any more feeding. They are at work by daylight, as cool as the mornings are. They have been idle so long they are making good use of the present flow. B. G. LUTTRELL.

Luttrell, Ala., Oct. 10, 1887.

No, friend Luttrell, it is not honey-dew, but it is honey from what are called oak-balls. Although you do not say so, I presume the balls you describe are found on oak-trees. The matter was discussed in our columns in Dec., 1881, p. 601, and on pages 35, 82, and 182 for 1882, which see. On page 182 you will notice an engraving of a twig of the oak-balls. In regard to the insect that produces these balls, I should be glad if Prof. Cook would tell us something about them, or refer us to a description. I can not remember that the insect has been particularly written up by any entomologist.

ANOTHER GOOD REPORT FROM THE ASTERS.

The past summer has been very poor here for the bees as well as for the farmer, in regard to different crops, fruits, etc. There were, during white clover, about 30 to 35 days of very nice honey-gathering. Early in July the flow suddenly ceased. In the mean time there continued a severe drought up to Sept. 20th, when it rained slowly for a day or so, cooled up, and by the 26th we had a pretty hard frost, bees doing no good. About the 20th to the 26th, wild asters appeared. It is all over this country, a few spots excepted. At this time the bees are almost wild over it, and are filling up their old dry combs full as fast as in the white-clover season, except the very best of the white-clover harvest. If the days were as warm early and late, and as long, as they were in June, I believe the bees would fill their combs as they did in June. The shortness of the days, as well as the coolness of the morning and evening, work against this flower. The bees are doing finely on it, and storing lots of honey, according to the time they get to work on it. There are two kinds here—a pink-white, which grows larger. DR. W. S. JONES.

Central Station, West Va., Oct. 10, 1887.

THE BUTTER-DISH FEEDER.

I am feeding 50 colonies with your feeder, and prefer it to all others I have tried. I tried butter-boats on top of frames, but they tip over and spill if half full. Brood was so plentiful I could not feed till the 5th. J. C. STEWART.

Hopkins, Mo., Oct. 13, 1887.

We have no trouble to get the butter-dishes level full by "tilting" them, as described on page 794 of last issue. With the Simplicity feeders it is quite essential that they have a level foundation. The butter-dishes can, by "tilting," be made to set level, even upon uneven surfaces.

APPARENT QUEENLESSNESS IN SEPTEMBER.

The queens you sent me last year were accepted. I have Italianized this year to some extent, but for some reason I have lost four or five queens out of ten colonies. Some, and I think most of them, were young too. I have given my last ones brood, but without success. What is the trouble? Is it ignorant handling, or something in the season? I have not handled them except occasionally, say once a month or so, to see that they were all right. They

would be full of brood at one time, and in a little while no brood at all. Would they be sure to have brood at this season if they had a queen?

Dalton, Pa., Sept. 19, 1887. C. W. PURDY.

I am rather inclined to think your colonies were not queenless at all. It is not uncommon to find no brood in a colony as early as the middle of September, even when said colony has an old queen. See editorials on "Queenlessness" in October 1st issue, and again in Oct. 15th.

SOME ADVANTAGES OF A HOUSE APIARY.

My house apiary is virtually the same protection as the chaff hive, only a little better. I have it plastered on the sides as well as overhead. I can work with them rainy as well as windy weather, and I have not the cross bees to contend with. There is also no danger of robbing, and the cost is not over fifty cents a colony. GEORGE BRIGGS.

New Sharon, Iowa.

Friend B., I know that all you say is true; but for all that, we have never found anybody yet who liked to work with a house apiary. Our folks all prefer hives outdoors, one in a place, and that one so you can work all around it.

SKUNKS AS A BEE-ENEMY, AND HOW TO GET RID OF THEM.

I am interested in all the honey reports, and particularly from ladies, knowing that what has been done can be done again, under similar circumstances. My bees did well, considering the trouble they had from skunks gobbling them up. I was ignorant of the harm they were doing (as they took none of the little chickens) until I consulted my A B C book, where I learned they were not nosing about the bees for nothing. There were two or three seen at them at one evening, and one several other times, until I could notice quite a difference in size of the swarms. I could learn of no help for it in my bee-papers, and I was more troubled about it than the drought prospects; and as I could not shoot them, I tried setting "Rough on Rats." I stirred it in an egg for them at the hives, two nights; and after the second dose was gone they disappeared, to my great relief. I have tried outdoor work with bees and in the garden, with a nap before dinner, and think there is no medicine better. I wish you could teach us how to make labels for plants, that will stand through a season.

Watertown, O., Sept. 14, 1887. MARIA L. DEMING.

Many thanks for your kind words, my friend; and we are also glad to have you give the additional report in regard to the danger that may be done by skunks. We congratulate you on your success with "Rough on Rats." No one but a woman would have thought of it.—In regard to the labels, if you will turn to p. 989, '86, you will see that I discussed the matter at considerable length. We have never found any thing that would answer on our grounds, from one season to another, so well as common printing-ink, printed on water-proof manilla paper. Our seed-bags are all made of this kind of paper; and after you have sown a package of seed, tack the seed-bag on one end of a stick, drive it in the ground at the end of your row, and you will have a good plain label for a year, or two years, if you want. In labeling strawberries, raspberries, and such things, for the past few years we have been cutting enough of the name, with the point of a knife, into the wooden stake, so as to be sure, when spring came, we could read the marks on the stake, without any possibility of mistake.

OUR QUESTION-BOX,

With Replies from our best Authorities on Bees.

All queries sent in for this department should be briefly stated, and free from any possible ambiguity. The question or questions should be written upon a separate slip of paper, and marked, "For Our Question-Box."

QUESTION NO. 16.—*In what portion of the hands or face is the pain of the bee-sting the most intense?*

In the gristle of the nose or ear.

W. Z. HUTCHINTON.

Around the eyes; in the nostrils; under the finger-nails. DADANT & SON.

Under the finger-nails, and on the edges of the nostrils. PAUL L. VIALLON.

The tip end of the nose, or lips, and tips of the fingers. MRS. L. HARRISON.

In or near the eyes, on the end of the nose, and the ends of fingers. O. O. POPPLETON.

About the roots of the nails on the hands, and on the tip of the nose on the face. G. M. DOOLITTLE.

Perhaps the tip of the nose, upper lip, and the inside portions of the hands and fingers.

C. C. MILLER.

Under the end of the finger nails, on the point of the noise, or the outer edge of the upper lip.

R. WILKIN.

Where there are the most nerves, and where the swelling is least. I may mention the end of the nose, the rim of the ear, or ends of the fingers.

JAMES HEDDON.

In the hollow of the hands, and between the fingers near the hands, and on the forehead. It also hurts quite severely on the edge of the ears.

DR. A. B. MASON.

About the head. First, up in the nose, between the nostrils; then on the ears. It swells most when stung on the lip; on the hands, it hurts most between the fingers and under the nails.

E. FRANCE.

We can not say. I think why it often hurts so severely is because the sting enters an arteriole, and so the blood receives much poison at once. This may be on hand, face, or anywhere on the body. A. J. COOK.

All nerve centers are called specially vulnerable spots, I believe. On the septum of the nose is a pretty good place; but beginners in the art of getting stung should try the easier spots first. Stings between the fingers and on the sides of the finger-joints seem to me to feel a little worse than elsewhere on the hands. E. E. HASTY.

Well done, friends. These answers from so many different people bring out very important points. I have had a bee-sting under my finger-nail, so painful as to keep me awake nights, when ordinarily I wouldn't

stop at all for any bee-sting. I didn't know that so many others had had a like experience. In the above, five different replies mention finger-nails, therefore we can all set it down that it is not well to give a bee a chance to get his sting under the nail if you can help it. I always feel sorry for anybody who has received a sting on the end of the nose. When a really dignified, sedate individual gets such a sting, it is really painful for me to see him lose his dignity and act like common mortals for a little while.

QUESTION NO. 17.—*Do you think reversing has paid you so far in dollars and cents? In other words, have you secured more and better honey, sufficient to cover the first cost of implements necessary for reversing?*

I have never done any reversing. E. FRANCE.

I have never practiced reversing.
O. O. POPPLETON.

Have had no experience with reversing.
MRS. L. HARRISON.

I found no advantages in reversing brood-frames.
PAUL L. VIALLON.

My little experience so far has shown no advantage. C. C. MILLER.

No; but it has been lots of fun, and I always enjoy that. DR. A. B. MASON.

Yes. I think the advantages gained more than pay for extra trouble. A. J. COOK.

We do not reverse. We think there are as many disadvantages as advantages. DADANT & SON.

No. The best part of such an operation is the getting of the combs built to the bottom-bar of the frame; at least, such is my opinion from the experience I have had along that line.
G. M. DOOLITTLE.

Yes; I think it has paid me. But by using two sets of shallow combs for one brood-nest I find that, after one inverting has completed the combs, I can accomplish all I wish, simply by alternation.
W. Z. HUTCHINSON.

In the reversing business I stood back and let the other fellows try it; consequently I have very little personal experience to relate. My impression is, that the other folks aforesaid have not made it pay.
E. E. HASTY.

Yes; reversing brood-combs, if only once, to get them to completely fill the frames, leaving no lurking or lodging places for bees, pays me for making all kinds of frames reversible. My suspended reversible L. frame has two important advantages, whether ever inverted or not—no trouble from sagging top-bars, and the jog in the frame aids materially in quickly and safely moving it in and out of the hive. The functions of my new divisible brood-chamber hive are such as to completely supersede the inverting system, after the first inversion to completely fill the frames. JAMES HEDDON.

QUESTION NO. 18.—*To get the best results in comb honey, what number of Langstroth frames should be in the brood-chamber when supers are on? how many American or Gallup frames?*

Five Langstroth or American; six Gallup.
W. Z. HUTCHINSON.

Eight Langstroth; I never used the others.
MRS. L. HARRISON.

Five Langstroth, six Gallup, and five American.
G. M. DOOLITTLE.

About seven or eight of the two first-mentioned frames. I have had no practical experience with the other kind. O. O. POPPLETON.

About five Langstroth are enough, and six or seven Gallup or American. I find this contracting of the brood-chamber all that is claimed for it.
A. J. COOK.

Except during the autumn honey-flow, five or six Langstroth frames, or their equivalent in comb surface. For the fall yield, I should prefer eight.
J. A. GREEN.

I have of late used four or five, but I'd give a good deal to feel more sure of my ground. It is possible that seven are better, and there is still room for experiment. C. C. MILLER.

I have found that eight frames were the best, especially in the early part of the season; the same number of American frames. I have never used the Gallup. PAUL L. VIALLON.

I use seven, but am not sure that six would not be better than seven, with the Langstroth frame. About half of my hives take the Gallup frame, and the other half the Langstroth. E. E. HASTY.

We are not producers of comb honey to any extent; have not had much experience in that line, so I will leave the questions on comb honey blank. I don't like to give an opinion without experience to back it. E. FRANCE.

Not less than ten L. We succeed best with ten Quinby, old style. This year, again, our ten L. frames need feeding, while the ten-frame Quinby have made enough to winter, owing to their more numerous population during the harvest.
DADANT & SON.

Eight Langstroth, and about the same *space* when Gallup or American hives are used. With Gallup frames I usually used less space, but they did not winter so well. The space should be such as will admit of storing sufficient for winter besides breeding-room. GEO. GRIMM.

I have had but little experience in contracting the brood-chamber for comb honey, but have had several years' experience in contracting for extracted honey, and contract more closely for comb than for extracted. The number of frames to be left depends upon the strength of the colony and the size of the hive. I use the eight-frame Langstroth hive, and contract to four frames for surplus. DR. A. B. MASON.

At that period in the surplus season after which we do not care for any excessive brood-rearing; that is, 30 days after which workers are of no special value for surplus storing that season, I greatly prefer to contract my Langstroth brood chambers to five combs. We make this contraction with the swarm when we have it, and with the old colony about 20 days after it swarms. I would advise contracting to the same number of American or Gallup frames. JAMES HEDDON.

If the amount of comb honey to be produced by a strong colony is the object, eight combs filled with brood answer, perhaps, best. But if your queen is

prolific, swarms are liable to issue, when the object is missed. If no swarms issue, the combs are kept filled with eggs, and brood is reared longer in the fall than is desirable, when feeding for winter will be necessary in the majority of cases. My best results, all points considered, were above, 10 frames filled with brood. This causes less liability to swarm. The queen is not restrained in her laying capacity, and lays fewer eggs toward fall. Honey takes gradually the place of the brood; and if winter feeding is necessary it is an exception to the rule. My frames are Langstroths; have had no experience with the American or Gallup.

CHAS. F. MUTH.

Is it not possible, friends, that the yield of honey has something to do with the number of combs to be used in the brood-chamber, while getting surplus honey?

Every boy or girl, under 15 years of age, who writes a letter for this department, CONTAINING SOME VALUABLE FACT, NOT GENERALLY KNOWN, ON BEES OR OTHER MATTERS, will receive one of David Cook's excellent five-cent Sunday-school books. Many of these books contain the same matter that you find in Sunday-school books costing from $1.00 to $1.50. If you have had one or more books, give us the names that we may not send the same twice. We have now in stock six different books, as follows; viz.: Sheer Off, Silver Keys, The Giant-Killer; or, The Roby Family, Rescued from Egypt, Pilgrim's Progress, and Ten Nights in a Bar-Room. We have also Our Homes, Part I., and Our Homes, Part II. Besides the above books, you may have a photograph of our old house apiary, and a photograph of our own apiary, both taken a great many years ago. In the former is a picture of Novice, Blue Eyes, and Caddy, and a glimpse of Ernest. We have also some pretty little colored pictures of birds, fruits, flowers, etc., suitable for framing. You can have your choice of any one of the above pictures or books for every letter that gives us some valuable piece of information.

CONDUCTED BY ERNEST R. ROOT.

THE BOYS' BEE-HIVE FACTORY.

NEATNESS, ORDER, AND DISPATCH, VS. SHIFTLESSNESS, DISORDER, AND PROCRASTINATION.

"MARY, have you had my hammer? Have you, ma?" inquired Sam as he came in breathless haste from the barn.

"Why, no, we haven't had your hammer," said Mary.

"Well, Jimmy and I have been hunting all over that barn, and we can't find it. Somebody has been there, I know, and we can't find any thing this morning. That new steel square that pa bought for me is gone too; but we haven't seen the wrench, with which we change our buzz-saws, for pretty near a week."

"I am sure, my son," said his mother, "we have never meddled with your tools. Perhaps father has had it. There he is now, just going down the lane."

Sam scampered off where his father was.

"Say, pa, have you had my hammer? I can't find it anywhere."

Then Sam went on to tell how, in some mysterious way, his tools disappeared, and one after the other had become missing.

"I have not had your hammer. If I had, I should have returned it before this. There surely must be something the matter," said his father, in all seriousness. "Somebody has been there. Perhaps I can tell the culprit by the tracks that he leaves."

"If it is Jake," said Sam, with elation, "the fellow who stole those watermelons and broke our windmill, we won't let him off quite so easy as we did before."

"I rather suspect," said his father, in a knowing way, "from the evidences that I have seen, that I can call the culprit by name. We'll see." They started toward the barn, and, on arriving there, they found Jimmy pulling things over right and left, in hopes of finding one or more of the missing tools.

"There's no use hunting," said Jimmy; "you might hunt for a dog's age, and you could't find one of 'em."

"I guess not," said Sam, confidently. "Pa says he thinks he knows who has been here;" and Sam began to hop up and down.

"What!" said Jimmy; "if it was Jake I'll pummel the life out of him."

"Well, boys, would you like to know his name? He has been all over the country, and he has made the world a vast amount of trouble. I am afraid he has caused little boys to say bad words that they ought not to have said, sometimes. His name is, well —Shiftlessness. Some folks call him Disorder; but call him what you like, we want to take measures to get him out of the way as speedily as possible. He it is who has laid away your tools."

"Shiftlessness!" uttered Jimmy. "Does he have two legs, two eyes, and two arms, and walk around like we do?"

"I rather suspect he does," said Mr. Green.

"About what year was he born?" inquired Sam, with a sly twinkle in his eye.

"Very soon after Adam was expelled from the garden of Eden," replied Mr. Green. "Now, boys," he continued, "I have given you a little of his personal history. I shall have occasion to refer to a few of his characteristics at another time; but the first thing that I want you to do is to slick up your work-shop. Here you have got a pile of rubbish, frame-stuff, pieces of hives, sawdust, and a general litter all mixed up in a heap. It is in the way so that you can't work to advantage. Your pile of boards is also blocking the passage. See, you can't get to and from your saw-table without stepping over those boards every time. What tools I can see are lying about the floor, presumably where they were last used. The side-boards and end-boards for the hives which you sawed out are piled right in the alleyway. Just back of them is the frame-stuff. Every time you try to do any work you are obliged to make an uncommonly big jump, or else smash and scatter every thing. Now, who did all this? It was not you, boys, was it? It was Shiftlessness, the individual who was born some six thousand

years ago. He it is who delights to visit boys' work-shops and some farmers' barns and barnyards. Now, boys, I haven't time at present to talk longer. I propose that you and Jake and any others of your friends you may choose to invite, come over to my house this evening and I will talk to you about the general characteristics of Old Shiftlessness. In the meantime I want you to pile all the boards of a kind by themselves, the frame-stuff by itself, and the kindling-wood in baskets by itself, after which sweep up the shavings and sawdust. In order to do a good job, your mother ought to boss the job for you; and if Mr. Shiftlessness doesn't return the missing tools right speedily, then I shall miss my guess." So saying he left the boys.

After he left he reported to his wife the condition in which he found the barn-loft, and requested her to give general instructions. Upon being summoned by the boys, Mrs. Green hastily put on her bonnet and started for the barn. When she arrived at the scene of operations she commenced in this wise: "Well, boys, I speak from experience when I tell you that you want to have those things which you use the most the nearest to your work. I always try to avoid making useless steps for an article in the kitchen, and so I arrange my cooking-implements as near to the place where I want to use them as I can. The same is true in regard to your lumber and tools. You must not have them in your way, and they must be arranged every thing in its place. First of all, before you go any further you want to discuss between you what tools you use most. They should be placed in that part of the shop where they will be the handiest. Mr. Green instructed me to tell you that your lumber should be piled so that it would not have to be handled three or four times before actual work was put upon it."

The kindling-wood was to be piled in the wood-shed, the shavings in a barrel, and the sawdust to be used for making paths. Mrs. G. then left them. In our next issue we shall see how they succeeded.

JUVENILE LETTER-BOX.

"A chiel's amang ye takin' notes;
An' faith, he'll prent it."

A PROBLEM FOR THE LITTLE FOLKS.

Well, young friends, I haven't called upon you for some time to answer a problem, have I? Here is a problem, concerning which if we could get the most of you to agree on uniformly we should consider the results as thus gathered quite a little addition to our fund of knowledge. The problem is this: If bees be taken out of the hive, dropped into the snow, and left there, how long can they remain in that chilled condition and yet be revived on being placed in a warm room? What I want you to do is this: As soon as we have a good fall of snow, which probably will not be many days hence, you are to get a couple of dozen of strong, healthy bees,* and drop them into the snow, when they will become chilled and apparently dead. At the same time that you drop the bees into the snow, you are to get an equal number, place them in a queen-cage, and leave them outdoors where they will be exposed to a freezing temperature. Now, every twelve hours from the time that you begin your experiments I want you to take two bees from the snow and two bees from the queen-cage, place the four in a warm room, and allow them to revive if they will. The point is, I want you to see just how long bees can remain in a chilled condition and yet be brought to life, so to speak. Mr. Doolittle has made some experiments; and, if I am correct, he has stated that the extreme limit which bees could be brought to life again from their chilled state was three days. Very likely he is correct, but I am sure friend Doolittle and others would like to see what a dozen or more little folks could do in proving or disproving his assertion *in different localities*. It is possible, that under certain circumstances you could make the bees revive after being chilled for four days continuously.

While you are making these experiments, boys and girls, don't forget to have a note-book, or something in which you can write down what you see at the end of each twelve hours when you warm up the bees. Ask your mamma or your papa to help you in doing the work. Now, every juvenile who will make these experiments carefully, and send in a careful report, we will give, in addition to the usual prize offered at the head of this department your choice of the following: A panel chromo, size 8½ x 21—a beauty, and an ornament to any home.

New Version of the New Testament, paper bound, large print.

Papeterie, a pretty box of stationery containing 24 sheets of note paper and 24 envelopes. This is a beautiful present for a girl.

Knife, two-bladed, bone-handled, blades good steel; a nice present for a boy.

A horse-shoe magnet. Every boy knows what they are for.

The above prizes will not be confined to those who write only upon the subject of chilled bees. Any juvenile who can furnish us something for this department, on other subjects which rather surpass in interest and value the average run of letters which we get, we will send him one of the premiums; but in any case, little folks, please bear in mind that we are to judge whether your letter deserves this additional premium.

WILLIAM'S LETTER.

My brother has now 12 bee-hives. He has an extractor. The bees are getting more honey now than before. Goldenrod is in bloom, but the bees are not getting any honey from it yet. They are getting honey from ice-plant, or silver-weed.

Belton, Tex., Oct. 8, 1887. WM. MOGAN.

*I omitted to say right here that the bees should be filled with honey before causing them to become chilled.

SOMETHING FROM WASHINGTON TERRITORY.

There are a great many wild flowers out here, which are full of honey. If we had some bees we could have honey to sell, and all we could eat. Teanaway City is growing fast. We live one mile from town. SETH S. SEATON.

Teanaway City, W. T.

ASHES IN FRONT OF THE ENTRANCE.

Pa takes GLEANINGS, and he says he would not do without it. He throws ashes on the snow in front of the hive, to keep the bees from falling in the snow, and freezing; he thinks it does good, and wants to know your opinion about it.

Yocumtown, Pa. HATTIE FETROW.

Very likely the ashes would answer a good purpose, if the bees fly while the snow is on the ground; but we have never found it necessary to use any thing.

CORA'S LETTER.

Papa had 9 stands, and increased to 28 by the information obtained in your books. Most of our bees swarmed, and papa hived them. They went to work nicely. I am not afraid of bees. I go all around the hives. I love to read little folks' letters. Papa is going to send for some carp. We have some nice places for ponds. CORA THOMPSON.

Bristol, N. C.

"A BEE-PATCH."

Frank, a small boy, saw some bees on some goldenrod flowers, and went home and said to his mother, "You can't guess what I have found." "No," said his mother. "I found a bee-patch."

Nolandville, Tex. CHARLES NORMAND.

I suppose the little boy meant that he saw a field literally covered with humming bees. It is a pleasant sight, isn't it, to see the bees thus busily engaged? How happy they are! Bees never get into mischief when they have something to do in the fields. You know, "Satan finds some mischief still for idle hands to do," and little bees are no exception when they are idle.

MELVIN'S BROTHER'S 300 COLONIES.

I go to school every day, and read in the third book. My studies are arithmetic, grammar, writing, and drawing. I have two brothers, bee-keepers. One brother commenced with 3 colonies last year, and now has 28. The other brother has 300. I help to attend to them in the summer, and watch them when they swarm. I like honey very much, and sometimes I get a sting. MELVIN L. MOORE.

Pelham Union, Ont., Can., Oct. 23, 1887.

THE BEE.

Bees live between 6 and 8 weeks in the honey season. The drone lives about as long as the bee, but sometimes the bees kill them before they get very old. The queen sometimes gets to be very old. She doesn't do any outdoor work. She generally lives through the second or third season. My brother has four stands of bees. The bee is a very particular little insect. If the hive doesn't suit them they leave it. C. J. FOX, age 12.

Brookville, O.

NELLIE'S REPORT.

My papa has 30 stands. He gave me one hive, and I got $2.50 worth of honey. We sell the extracted at 10 cts. a pound. We have one of your extractors, and like it real well. Papa took his wax-extractor to the fair and got the first premium last week. Our bees did the best of any one's around here. We got over 1000 lbs. of honey. We take GLEANINGS. It is papa's favorite book.

NELLIE DICKMAN, age 14.

Defiance, O., Sept. 7, 1887.

RECIPES FOR HONEY-CAKES.

I send you two good honey-cake recipes.

Poor Man's Cake.—One egg, broken into a cup, and beaten a little; fill up the cup with sweet milk; take one cup of honey, half a cup of butter, one teaspoonful cream tartar; half a teaspoonful of soda This is a good cheap cake.

Sponge Cake.—One cup of honey, three eggs beaten to froth, half a cup of sweet milk, two tablespoonfuls of melted butter, one teaspoonful of cream tartar, half a teaspoonful of soda; flavor to taste. Add flour enough to make a light sponge. This recipe makes a nice jelly or cocoanut cake.

Edgerton, Kansas. WILBUR ENDLY.

WINTERING BEES UPSTAIRS.

My pa caught a swarm of bees, and made a hive and put them in it. He had never tried to keep bees before, and so he thought he would put them upstairs, and they all died. Then he bought another swarm, and now he has nine. He had a swarm that was packed, and he did not unpack them soon enough. The comb melted and fell, and it smothered all of the bees. My pa takes GLEANINGS. I like to read the juvenile letters. JESSIE BRYNER.

Bloomfield, Pa.

Friend Jessie, I am glad you have told us of your papa's failure, for it gives me an opportunity to say that I hardly ever knew of bees wintering successfully in an upper room. The changes of temperature are too great. In the coldest weather it will be too cold, and in the warmest weather it will be too hot, in spite of any thing we can do. I do not quite understand why the combs should melt and fall down on account of the packing. Our chaff hives are packed both winter and summer, and we never knew of our combs melting down, unless the bees were fastened in the hives.

HOW TO PICK UP BEES.

We have a few stands of bees. I said I was not afraid of the bees, so one day I picked one up on my finger, and it stung me. One day my ma was hiving the bees, and they stung her all over the head. KATE NEFF, age 8.

Cleve, Polk Co., Iowa.

Friend Katie, you didn't pick up the bee right. You remember, perhaps, about a year ago I gave some instructions how to pick up bees. You were first to practice on drones, as they crawl over the comb. With your thumb and forefinger, grasp the wings and you can pick up the drones without a bit of trouble. Keep on practicing with drones until you have learned the knack of picking them up without hurting them. Having done this you can then with more security pick up the worker-bee. You must be sure to grasp hold of both wings, otherwise he will turn over and make you feel inclined to let him go. It is one of the little fine arts of bee-keeping to fill a queen-cage with a dozen bees or more, in a half-minute. It can be done, and has been done, by those who know how.

OUR HOMES.

Him that cometh to me, I will in nowise cast out.—JOHN 6:37.

MR. ROOT:—You have asked the question, "What other one is there who wants to commence right *here* and *now*, in laying up treasures in heaven?" I would say, here is one who has long desired to be a Christian; and it seems to me that I have done every thing I could, and yet it has done no good. What am I to do? Reading your little sermons, and Elsie Myrtle's and Frank C.'s letters, has influenced me to do this, and are partly the cause of my interest in my eternal welfare. Sometimes I have almost imagined I have experienced some kind of a change, but think I must have been mistaken. Now, Uncle Amos, I want you to pray for me, to ask God to forgive me, for Jesus Christ's sake; or if I am a Christian, to enable me to see my way clear. I would give millions of worlds, were I able to say from my heart, "I *know* I am one of God's children," and how gladly would I serve him! I want *all* the Christians who read GLEANINGS to pray for me too. God bless you, and the grand work you are doing for him. Your little friend, S. D.

Texas, Oct. 24, 1887.

May God bless you, my little friend; and may he give Uncle Amos wisdom in leading you and other lambs of the fold in safe pastures, and by pure, wholesome waters. My dear friend, you are wasting time in longing for something, and waiting for something that God has not, at least as yet, seen fit to give you. May be I shall be cutting on to some of the doctrinal points that I know but little about, in my answer; but I feel sure that I can advise you safely. In becoming a Christian, there should surely be a change of heart; and many times, where the penitent sinner has been guilty of great sins, or even crimes, the change of heart is so wonderful that we may truly say, "This individual has been born again." And such converts often startle communities by exhibitions of emotion and joy and peace, which we do not find at all where some one who has always lived a pretty good life turns to Christ. I should infer from your letter, friend S., that no very great change is needed in your life, to make it a consistent Christian life. Remember, I don't know you, and I am guessing somewhat in the dark. What you need is faith in God—implicit trust in him and his promises. In our text we are told, "Him that cometh to me, I will in nowise cast out." Now, dear young friend S., you have come to Christ; and if his promise be true, you *are* one of his children; and all that remains for you is to go right to work serving him, without waiting any longer. Do it out of love to him, and not with a hope of reward. If you do this, I think this peace and joy which you have been craving will probably come in his own good time; but remember, S., that we are unlike in disposition and experience. When I first turned to Christ it was a big turning about, I tell you. I had been ridiculing the Bible and prayer-meetings, and had been persuading people not to go—yes, even the boys and girls in my employ. I told them it was wasting time. More than that, I tried to prejudice people against the meetings, and against God's chosen servants. Now, when I turned right squarely round about, and even went to the prayer-meetings, and publicly recalled what I had said, and promised to be a faithful follower and servant of Christ Jesus, so long as he gave me life, I could not help feeling differently. I was a new man, as it were, and a very much better man, my dear young friend. Under these circumstances it was quite natural that I should have a bright and joyous experience. It should be remarked, too, that I am naturally imaginative and enthusiastic. I get happy over bees and gardens and poultry, and you must remember, too, that I get blue and low-spirited at times, also. Now, when one has long been evading some duty that stood before him, he almost always feels a thrill of happiness when he takes up this duty. This is a law of the human mind; yet these feelings, of themselves, do not amount to much, after all. Some new converts who have these bright and joyous experiences, backslide and give up their religion in just a little while. Feeling is a good thing, but there must be a substantial purpose back of it. I remember one young convert who said that he could not say that he had experienced a change of heart, but he had certainly experienced a change of purpose. Now, a change of purpose is what God wants. He wants you to stop doing every thing you know is wrong, and commence doing every thing you think you ought to do. In other words, do your duty, whether you feel like it or not. It is like getting up in the morning. Your feelings are not to be consulted at all. Your duty is the thing to consult and consider. Duty says, "Get up and attend to your work in proper season." Feelings would say, "It is too cold, and I am too sleepy," etc.

Now, I am glad to be able to tell you of a Christian experience that was so entirely unlike mine, that the person could hardly believe she was accepted of God; and this one I am going to tell you about is no other than my dear wife. Before I became a Christian she was not a member of any church. She was in the habit of reading her Bible, and of going to her heavenly Father in prayer whenever she was in trouble. She prayed for her children, and sent them to Sunday-school, and tried to do her duty as a Christian; but she had never thought much about church membership, and perhaps had an idea something like yours, dear little friend, that when God should give her a bright and vivid experience she would know then that she was called of him, and would be ready to do whatever he asked her to do. Well, when I, all of a sudden, as it seemed, took hold of the Bible and united myself with Christian workers, she was, like everybody else, surprised and astonished; and she, too, like many others, felt sorrowful because she could not have an experience like my own. As a matter of course, I urged her to join the church with me. She said at first she did not dare to. She said she had no *feeling* in regard to the matter. Our pastor tried to explain to her that it made no

difference; but her early training and teaching had been so much to the contrary that she felt greatly troubled and worried about calling herself a Christian before she had had any evidence that she was called to be one of Christ's chosen ones, or one of his "anointed," as it is sometimes termed. I suggested to her that she would receive "the blessing," as we often call it, by going forward and taking up Christian duties. Finally, in response to my urging and that of our pastor, as well as that of the pastors of the four other churches (for we had a union revival that winter), she united with the church. You may ask, did this happy experience—this great change that is often termed the "new birth"—ever come to her at all? I am obliged to say, perhaps with some qualification, it has not come to this day; it never came at all; she never felt any sort of change; and at times for a good many years she was worried and troubled for fear she had done a wrong thing in uniting with the church as she had. In fact, I was for a time afraid that she would never feel satisfied with her religious experience; but I am glad to say now that her faith in God and his promises is perhaps even more firmly rooted and grounded than is my own. Dear friends, many of you may think there is no sort of danger that *I* should ever change in my love toward Christ; but could you know my wife as I know her, I think you would say that her Christian character is *more* firmly builded on the rock of Christ Jesus than is my own. The rains may descend and the floods come, and the winds may blow, and in a way to intimidate and demoralize even the veterans in Christ's service; but Mrs. Root's faith will never waver. Very likely I may, when great trial comes, be demoralized and frightened, and perhaps, for the time being, inclined to doubt. My experience may be like Christian's, in the Pilgrim's Progress; but my wife's experience will be more like that of his companion Hopeful. Do you ask where or how she got this firm faith? It has been by doing duty in all these long years, and paying no attention to feeling. Two of our children are married, and have homes of their own; three others are growing up, and their minds are being molded and formed by a mother's love. Our children have been wayward and contrary—sometimes stubborn—yes, fearfully stubborn, as their father was; but my wife has gained faith in God by praying and working with these children. Her reward has never come by jumps and starts. It has come in the even tenor of her life. She has tested the promises so many times during these years that are past, that they have got to be a part of her very nature; and instead of the bright experience that I and some others have enjoyed at times, hers has been a calm and peaceful rest and trust in the Father's love. No doubt there is wisdom in these different experiences. My enthusiasm has been the means, perhaps, of turning a good many toward Christ and his kingdom. Very likely my wife's clear even way has done fully as much among her circle of friends and acquaintances.

I am glad to know, dear friend S., that you are stirred, and that your faith was brightened by those letters from our brothers in the penitentiary; and I would suggest that you will probably enjoy doing mission work of this kind. Go with your father or mother or brother, or with some Christian brother or sister, to your nearest jail, and interest yourself in the inmates there. Tell them of Christ, and of his love for sinners. Never mind yourself; accept with thankfulness what God has given you in the way of religious experience, and don't trouble yourself or worry about the other part. In that beautiful little book called "The Christian's Secret of a Happy Life," the author says, "In becoming a happy Christian there is a work for you to do, and a work for God to do." Then she says, "Now, you must take it for granted that God will always do his part; hence all that remains for you to do is to trust him and be ready to do *your* part." You are not mistaken, my little friend, if you really want to be a Christian. When you feel disappointed and discouraged in the matter, ask yourself, "Am I really hungering and thirsting after righteousness?" If so, then you are all right, and all you have to do is to wait for the promises. God will send them in his own good time.

Now, in closing, little unknown friend, I want to take up another side of the question. May be the reason why you have not a more vivid consciousness of being one of God's children is because you are not living up to his commands. I suppose you are, of course, reading your Bible; I presume you attend Sunday-school regularly; very likely you are a member of this new society that is doing so much good, called the "Society of Christian Endeavor." If so, then you certainly have plenty to do in Christ's service. I should think, from your childlike letter, that you are honest and sincere, and that your daily life is in accordance with this letter. If you want to be one of God's chosen ones, you must be sure you cherish no unkindness toward any one. I suppose, dear little friend, you are ready to shake hands pleasantly and good-naturedly with every man, woman, or child on the face of the earth; and if you have any enemies, I presume you are ready to shake hands and make up—always ready. No doubt there are brothers and sisters, and may be other people, who delight in teasing and bothering you. I suppose you are doing good to each one of them; that, in fact, you are trying to love your enemies. I suppose, too, you are helping your mother, studying her wants and wishes. I presume you take pains to enter into the interests and feelings of the younger ones of your family. I presume you are always pleasant and good-natured; that you are patient under suffering; that you are not always trying to please yourself. You remember the dear Savior pleased not himself; and I hope, dear little friend, you are always pure in heart. I can remember well, that, when quite a child, impure thoughts were sometimes put into my little head by getting among bad companions. If you want to be God's child, remember what he says: "Blessed are the pure in heart, for

they shall see God." Now, perhaps many will say the above is too strict and too hard in its requirements, for any one. May be some of you say, "Why, Mr. Root, you don't mean to say that a body must be a veritable angel here on earth, do you?" No, dear friends, I do not mean to say that; but I do mean to say that the change of heart that our little friend has longed for can come only in answer to being faithful in all these things. If you don't want darkness and doubts to visit you, beware how you indulge in any of those temptations that I have mentioned. My experience is, that there is no friend like a mother to help and to guide, especially when temptations meet you that you wouldn't care to talk about to anybody else except your mother. Make your mother your confidant in every thing that troubles you, and you can not go far astray. When you are tempted to hide and conceal certain things from your mother, then beware. This is where the first wrong step starts out, many times.

Sometimes when these things seem to be so very strict, or the straight and narrow path seems so exceedingly straight and narrow, we are tempted to indulge a little in things that we know good church-members ought not to indulge in; in other words, you decide you don't believe you are ready to pay the price. Then, my friend, you must pay the penalty. The wages of sin is death; and if you sin just a little, you may have a little taste of this eternal death that is the result of persistence in sin.

You have not told me how old you are, my child, and I can only guess at it from your letter. You have not told me, either, whether you are a member of any church, or have united with any body of Christian people. Now, my experience is that a young Christian must soon come to a standstill unless he comes out openly and confesses Christ. You know Jesus has said, "He that is ashamed of me and of my words, in this adulterous and sinful generation, of him also shall the son of man be ashamed, when he cometh in the glory of his Father with the holy angels." Don't let any false modesty hinder you from standing up boldly and honestly, and declaring your purpose to serve Christ, and to work with Christian people. In the postscript to the letter I have given, you desire me to use only your initials. This may be very well for a young person when coming out in print; but still I think, dear friend, it is generally best to stand up boldly and fearlessly, and hesitate not to state before the world just where we stand.

Some may ridicule such a course because you are young. But, let them ridicule, friend S. Suppose some of your schoolmates should say, "S. is afraid to tell a lie;" or, "S. dare not say bad words;" or suppose somebody should taunt you with being pure in heart, wouldn't you rather rejoice at such words? Well, being a Christian simply embodies all of these; and I think the very safest and best place for every child who loves the Lord is within the folds of the church; but if you try to keep it to youself, Satan will continually try to tempt you to turn back and give it up. In fact, he has been tempting you that way already. Now, there is no remedy for these temptations, that I know of, except publicly placing yourself on the Lord's side. Tell Satan and your fellow-men that *the act is done*—that, so far as you are concerned, you belong to Christ Jesus, and there is no use in discussing the matter any further. This act alone, many times, brings that change which you seem to long for. If you love God, you must love your fellow-Christians. In regard to this matter, John uses this strong language in his First Epistle: "If a man say, I love God, and hateth his brother, he is a liar." Perhaps the greatest trial of my life has been to have this true Christian love for all humanity—friends and enemies alike. I have sometimes thought, that when Satan had given up on every other point, almost, in my case, he still hung around, whispering evil insinuations and uncharitable suggestions in regard to the people I meet and do business with day by day. Repeat often to yourself the little text, "Judge not." Let God be the judge, and let him decide who is pure in heart and who is not.

One more word, my dear child: If your life is not as good and pure as I have mapped out in the above, remember that Christ Jesus came on earth to save sinners, and that our text is broad in its application. It is written especially for sinners. Even if you have sinned and strayed away, and backslidden a great many times, remember that God never gets tired of hearing you ask for forgiveness. "Him that cometh to me, I will in nowise cast out;" and, my dear young friend, it may be you will have to ask forgiveness over and over. If it were not so, you would be better than most of the old Christians. God is ever ready to forgive, when we are truly *sorry*. Keep close to the Savior; don't let a day pass without calling to him. Make the little prayer I have told you about, yours—"Lord, help!" No one can monopolize this little prayer. If all the world were uttering it mentally, at one and the same time, I should be gladder and gladder to know it; and Jesus the Savior would be gladder too. Breathe the prayer, whether you feel like it or not, when you know you are getting away into darkness and sin. If you seem to be *all* bad, as a great many of us do at times, don't be discouraged and cast down. At such times you can grasp hold of that prayer of David's—"Create in me a clean heart, O God, and renew a right spirit within me." This very prayer itself seems to indicate that David knew what it was to feel that he was getting to be *all* bad, and therefore it may encourage us. Now, when you have put these things in practice, and have found the peace that God usually sends sooner or later, I shall be glad to hear from you again, little friend, that your experience may be an encouragement to others; and I almost know already that this frank, honest, childish letter will be the means of raising others. One of the hopeful signs of the present age is, that children and young people are taking such an active part in Christ's work. Remember who it was that said, "Suffer the little children to

come unto me, and forbid them not, for of such is the kingdom of heaven."

Now, as we open this Home Paper with a letter from a child, here is another to close with, from one who has been forty-two years serving the Lord:

Dear Brother:—I just want to talk a little this morning, and tell you a part of my experience. I have been in the service of the Master forty-two years, and oh how it gladdens my heart to hear those young people speak out in his praise! Do you know I had been wishing for a long time that you would ask the bee-friends to give their religious experience for awhile? I was very agreeably surprised when I turned to Our Homes in the issue for Oct. 15. N. A. E. ELLIS.

Astoria, Mo.

JAPANESE BUCKWHEAT.

IS IT GOING TO BE THE BUCKWHEAT FOR BEE-KEEPERS?

AT present we have received reports from only eight different individuals. Now, we sold about forty bushels of this buckwheat for a test, and most of it in small packages of from two ounces to a pound; yet we have only eight reports so far; and it is a little singular that these eight reports are all *extra good.* Now look here, friends, I wonder if it is going to be true with this new buckwheat as it was said of bee-keepers in regard to reporting honey-yields, that nobody reports unless he has made a big thing. Please let us hear from those who have made a failure of it. I have given you our report, and I frankly stated that the yield of grain was not near what I was led to expect. Now let us have reports of all kinds—good, bad, and indifferent. Don't be backward in saying that it didn't do half as well as our old kinds, if such is the truth. Below are the reports alluded to above:

JAPANESE BUCKWHEAT YIELDED TWICE AS MUCH AS THE COMMON KINDS.

Our yield of Japanese buckwheat was satisfactory, taking the dry season into consideration. From one peck of seed, purchased from you, we have 4 bushels, 3 pecks—twofold more than the common black buckwheat yielded, both being treated precisely alike. Mr. Leikart, a neighbor, at our solicitation, sowed a bushel which he bought of Peter Henderson; and although the cows broke in and destroyed some, he has 27 bushels. This yield is also double what the silverhull yielded with same culture.

OUR REPORT.

Our honey report for this year seems meager compared with what we expected in the spring. Never were our bees in better condition, and never were we better prepared to receive a honey-flow—which did not come. A bright new wheelbarrow was in readiness from the Home of the Honey-Bees, on which to wheel the honey in screen-doors and windows into the honey-room, etc. We wintered 53 colonies, sold 5, and commenced the honey-season with 48. We increased them by natural swarming to 58, and have taken about 1700 lbs. of extracted honey and 200 lbs. of comb. The bees have an abundance of stores for winter, and we think the honey we extracted this fall the finest fall honey we have ever taken. It is dark, but has only a slight flavor of buckwheat. In the light of our experience this year, Japanese buckwheat is not so good for honey as the other kinds. It did not stay in bloom so long—matured more quickly.

MRS. BELL L. DUNCAN.

Black Lick, Pa., Nov. 8, 1887.

A YIELD OF 12½ BUSHELS FROM 1 PECK, UNDER ADVERSE CONDITIONS.

I sowed a peck of the new Japanese buckwheat, July 5, on a trifle over half an acre of ground. It came up well, and there were certainly plants enough properly distributed for an acre. It grew and blossomed well, but the excessive wet weather caused a lot of weeds to grow and somewhat smother a part of it. Unfavorable weather, and a frost at the close of the season, undoubtedly prevented the growth of so large a crop as might have been expected had it been sown one week earlier, as I intended. The weather was not quite dry enough when it was thrashed, and some (perhaps a bushel or two) was left in the straw. As it was, I secured just 600 lbs., or 12½ bushels of 48 lbs., after running twice through a good fanning-mill. I feel well pleased with it. The bees worked on it some, but stored no surplus. They also had other fields of the old kind to forage on. We do not get buckwheat honey here every year, and it is nothing against it that it had no honey this year. In 1886 we were favored with a large yield from buckwheat, having several hundred pounds in sections, and of extracted also. It sold slowly at about two-thirds the price of clover and basswood honey.

Walpole, N. H., Nov. 7, 1887. J. L. HUBBARD.

ONE AND ONE-FOURTH BUSHELS FROM ONE POUND OF SEED.

Mr. Root:—If you remember, I told you, when I was at your place, about getting a pound of Japanese buckwheat of you last spring. You asked me how much I raised from it. I could not tell you then, but I can now. I weighed it, sack and all, and it weighed 65 lbs. The sack will probably weigh 1½ lbs., and I think there was more than 1½ lbs. shelled off, as I noticed it was pretty thick on the ground, so I got 1¼ bushels by weight from one pound of seed. I told you we had an acre of buckwheat besides the above. We got 19 bushels from that. Don't you think both kinds did very well for a dry summer? It was a sight to see the bees working on the buckwheat. I never saw them work on it as they did this year. We cut a little over seven acres of red clover for seed; about one-third of it stood very thin. We got 10½ bushels of seed by weight from that. Our bees worked a great deal on that also; and also on the first crop of clover too. Don't you think bees working on such crops will cause them to fill better than they otherwise would?

Bristolville, Trumbull Co., O. J. S. BARB.

FOUR OUNCES YIELDED 62 LBS., AND ONE STALK GAVE 1153 KERNELS.

I tried the Japanese buckwheat this season on a rather small scale. Last spring my son purchased a 4-oz. packet of you. I sowed it June 25, on about 5 rods of ground, which was very thin. It came up and grew very rank, and soon covered the ground. The fore part of August we had a heavy rain that washed it quite badly. We had a severe frost before it was all matured. I cut it about the first of September. It stood out some three weeks, on account of wet weather, before I could thrash it, and

quite a little was destroyed by mice and birds. I thrashed it, and cleaned up 62 lbs. of nice buckwheat. I counted 1153 kernels from one stalk. Buckwheat this seasen is a very light crop here, not yielding more than 6 to 10 bushels per acre. I think I shall try the Japanese next season, on a larger scale. O. N. GUERNSEY.

Great Bend, Pa., Nov. 5, 1887.

A YIELD OF 160 TO 1.

Last spring I got of you 2 oz. of the Japanese buckwheat, from which I raised 20 lbs., which is a yield of 160 to one. It was sown in drills, and much of it was too thick, and it suffered from dry weather, or it would have given a still better result. Next season I intend to sow an acre or more; and if it equals in yield what this did I shall be well satisfied.

A. A. FRADENBURG.

Port Washington, Ohio, Oct. 29, 1887.

A YIELD OF ONE BUSHEL AND TWO QUARTS FROM ONLY HALF A POUND OF SEED.

You ask for a report from those getting the Japanese buckwheat of you. Well, I bought 1 lb. of the seed; and for fear it might fail I sowed just one-half of it. It grew well, but of course it was very dry here as with you. I harvested it, and thrashed one bushel and two quarts, but not as plump as the seed I got of you. I intend trying it again next year. H. J. BEAN.

Black Creek, Ont., Can., Nov. 8, 1887.

SIX BUSHELS FROM ONE PECK; THE GRAIN LARGER THAN SILVERHULL.

The peck of Japanese buckwheat that I received from you I sowed about the middle of June. I harvested from the peck of seed six bushels, which I admired very much while in bloom; also when I came to harvest it, as the grain was so much larger than the silverhull. I sowed the silverhull ten days later, alongside the Japanese, which gave about the same yield; but as the drought hurt all the early sown buckwheat much more than the later, I am quite well pleased with the result.

L. D. FREEMAN.

Venango, Crawford Co., Pa., Nov. 10, 1887.

I thrashed 34 bushels of Japanese buckwheat from one peck of seed purchased of you.

Elroy, Wis. E. E. BABCOCK.

THE CHENANGO-VALLEY APIARY.

A REPORT FROM A LADY BEE-KEEPER; HOW, IN SPITE OF FAILURE, SHE SUCCEEDED WITH EIGHTY COLONIES.

MY report may not be very encouraging to beginners. Last spring I met with severe loss in the number of colonies, far exceeding any previous year of the nine I have been in the business, and just as I thought I had mastered the wintering problem. I attribute the loss mainly to three causes—severity of the winter, the extra long confinement (very nearly six months), and working too closely for queens during the late summer. Last fall I put in winter-keeping, eighty colonies in good chaff hives, with abundance of stores. Those that I doubted, I fed with thick syrup made of granulated sugar, until I used two barrels. Well, I lost as many fed with sugar as with honey.

Last April found me a little blue. Fortunately, among those left were some of my best Italian queens. I bought ten colonies, which cost quite a sum, as bees were scarce. With all my combs left with more or less honey in, I soon built up to sixty colonies from which I reared queens enough to fill my orders. I am glad to say I have had good success, and, as far as reported to me, I have given good satisfaction, contrary to the prediction of some friends who said that, because I was a woman, I would not get any orders.

Queen-rearing is a pleasant occupation, although requiring the strictest attention. The necessary knowledge is more fully gained by experience; yet we all know how essential the leading bee-publications are to the apiarist, and how much more they are worth than their price.

The honey yield has been light in this section this season. The apiary I work for honey, about nine miles distant, in a basswood region, gave about 50 lbs. per colony. I think all my bee-keeping friends at the North will join with me in wishing for a more moderate winter. MRS. OLIVER COLE.

Sherburne, N. Y.

MEDICINAL HONEY.

A REMARKABLE KIND OF HONEY, BUT TOO "FISHY" FOR BEE-KEEPERS TO BELIEVE.

ONE of our subscribers sends us the following, which is marked as having been taken from the *Medical Journal*, of New York, from which paper it was copied by the *Tribune*, of the same city:

About three years ago a distinguished French naturalist, M. Guilmeth, who was traveling in Tasmania, came suddenly upon a grove of gigantic eucalyptus-trees, from 200 to 300 feet high, and with a trunk so large at the base that it took forty of his Kanackas, joining hands, to reach around one of them. High in those lofty trees he discovered what he at first took to be enormous galls, but which he soon ascertained to be the dwelling-places of swarms of small, black, wild bees of a variety before unknown to him. Dr. Thomas Caraman proposes for this bee the provisional name of *Apis nigra mellifica*. Besides being black and smaller than the ordinary honey-bee, this wild bee has its languet rather more developed than that of the domestic bee. M. Guilmeth attempted unsuccessfully to domesticate it in Tasmania. He caused some of these immense trees to be felled, and secured the honey. The largest individual store of honey weighed as much as 11,000 pounds avordupois.

The honey is described as a thick, homogeneous, somewhat transparent syrupy liquid of a deep orange color; having an odor suggestive at once of its containing eucalyptus principles. As the result of experiments on himself and one of his friends, Dr. Thomas Caraman states that, on taking a tablespoonful of the honey in a little tepid water or milk, after a few moments one perceives a gentle agreeable warmth take possession of his whole person. At the end of half an hour, the elimination of the active principles by the air-passages having begun, the voice becomes clearer and the breath perfumed; the lungs feel more elastic, more supple. Having continued the use of the honey for a week, four tablespoonfuls daily, the author, who speaks of himself as respectably fleshy, found that he could go up two pairs of stairs, two steps at a time, without stopping to take breath or feeling at all blown.

The fore part of the above item seems to have the impress of truth upon it—at least, for any thing we know; but the latter part, in regard to its medical qualities, is, in my opinion, entirely out of the way. It looks exceedingly like a puff for a patent medicine, and we should not be surprised if Mr.

Thomas Caraman would offer some of this wonderful honey for sale, sooner or later. Now, is there any one of our readers who is prepared to tell us whether such trees are to be found in Tasmania? And has there ever been such an amount as 11,000 lbs. of honey taken from one tree? Until some one can corroborate this statement, I think we can put it down as a humbug, the whole of it.

Our Own Apiary.

CONDUCTED BY ERNEST R. ROOT.

THE CONDITION OF OUR BEES FOR THE COMING WINTER.

WE have now packed in chaff, after the manner we have formerly described, 230 colonies, 176 of which number are at the home apiary, and the rest, 54, are in the swamp. In accordance with our usual custom we pack on chaff cushions the first of October—the loose chaff a month later. Why do we not put the latter around and above the brood-nest at the same time the cushions are placed on the hives? For two reasons we prefer to make the postponement. First, some colonies, in consequence of the shrinkage of the stores, resulting from evaporation and consumption, require a little more feeding. We find that we can not calculate exactly, before feeding, the amount this or that colony will need. Taking advantage of a few warm spells which are sure to take place during the last days of October, in our locality, after we have fed the estimated amount for each hive, we critically examine every colony to see if it still possesses a queen, and also whether it has its combs well filled with sealed stores. If any colony is lacking in either requisite, they are supplied. Second, it is much easier to adjust the Hill devices, slip in the division-boards, and pack in the loose chaff, after the bees have begun to contract somewhat in their winter cluster. If these things be done during a warm spell, the bees seem to take particular delight in crawling over behind the division-boards, and mix up in the loose chaff, as the latter is put above and around the brood-nest.

It may be urged, that the late feeding of a few colonies might be disastrous to them, as they would not have time to properly ripen and cap over the syrup fed before cold weather set in. That might be so; but last year we did precisely that thing on a much larger scale, and did not lose a *single colony* out of the 201 placed in winter quarters last fall.

At this time of year I believe our colonies were never stronger than they are this fall. They have not been reduced by the sale of bees during the summer months, nor did our apiary become reduced from foul brood. The latter we kept in check, not allowing it to get any sort of start. Last year we had only nuclei to go into winter quarters, and we wintered every one successfully. This year, with few exceptions, our bees cover six and seven frames full. Last year I should not have been surprised if we had lost one-half our colonies. This year I shall be surprised if we lose any thing over a dozen; but as this wintering problem is as intricate as it is uncertain, we might lose a large percentage of our bees in spite of the fact that every thing is favorable for wintering.

HOW LONG WILL CHAFF LAST IN CHAFF HIVES?

At the close of this season we had something like 100 chaff hives to disinfect. As the surest means to this end we decided to totally remove the chaff and boil the hives. This might seem like quite a difficult operation, but is not so hard if you know how. We turn the hives over on their sides, and with a nail-set and hammer set the nails clear through the siding—that is, the nails which secured the bottom of the hive. If you are careful to get all the nails set through, the bottom readily lifts out. Some chaff hives have been in use for a period of 12 years constantly; and as we drew out the bottoms of the hives we felt pretty sure that we should find old, rotten, and moldy chaff. On the contrary, we were very much surprised to find the chaff as nice, clean, and sweet as the day we put it in, and from all appearances it would have lasted another 12 years, which would probably be as long as the chaff hive itself would have lasted. After removing the chaff it was set aside to be used for bedding for horses, to be worked up into manure. The shell of the hives after the chaff has been removed is immersed in scalding hot water, after which they are set out to dry in the yard. They have all been repacked with clean new chaff, and are now in use again in the apiary.

Gleanings in Bee Culture.

Published Semi-Monthly.

A. I. ROOT,
EDITOR AND PUBLISHER,
MEDINA, OHIO.

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MEDINA, NOV. 15, 1887.

My little children, let us not love in word, neither in tongue; but in deed and in truth.—1. JOHN, 3: 18.

THE following note from friend Hutchinson explains itself:

FRIEND ROOT:—I have sold my farm near Rogersville, to my brother—the one who has been with me several years, and have purchased and taken possession of a small place (¾ acre) in the suburbs of Flint, Mich. I still own the apiary, and may eventually bring part of the bees here. W. Z. HUTCHINSON.
Flint, Mich., Nov. 7, 1887.

He writes that a good deal of his correspondence is going to Rogersville. Will those who have occasion to write to him please bear in mind in the future to direct all communications for friend Hutchinson to Flint, Genesee Co., Mich., lock box 1611?

QUESTIONS IN THE QUESTION-BOX DEPARTMENT—FURTHER DISCUSSION OF.

IT occurs to us, that perhaps not a few of our correspondents would like to see some of the questions,

propounded in our Question-Box, discussed more at length; and it is possible that those who have already given brief answers in the department would like to take more space to consider the matter, giving their reasons for their opinions, and the evidence whereby they have arrived at such conclusion. Such discussions upon the vital issues of our pursuit will be highly interesting and profitable, providing too much theory is not brought into action, and providing, too, that the discussions are not carried to such length as to become threadbare and worn out. If you have any further suggestions which you would like to set before the readers, we shall be glad to hear from you. In referring to any particular question, always give the number.

A LIBERAL OFFER TO THOSE WHO ARE WILLING TO COLLECT NEW NAMES FOR THIS JOURNAL.

In consequence of the press of general work, we have been unable to get out our Premium List as we had originally designed. We will try to have it appear in the next issue. In the meantime, for the benefit of those who are desirous of collecting names at once, we offer the following premiums:—

For ONE *new name, with your own renewal*, any of the following books, beautifully bound in cloth, and embossed on side and back in gilt. If sent by mail, 12 cts. must be added for postage: Dickens' Child's History of England, 341 pages.

Dickens' Shorter Stories, 350 pages.

Last Days of Pompeii.

Robinson Crusoe, 472 pages.

Gulliver's Travels.

Bunyan's Holy War, 318 pages.

Sketch-book, by Washington Irving, 374 pages.

For THREE *new names, and your own renewal*:—Ben Hur; a book of 560 pages. This work is "A Story of the Christ," and is wonderfully fascinating.

The offers above are very liberal, as any one can see. This will be a rare opportunity to get some valuable library books free. Call upon your neighboring bee-keeping friends, not subscribers to this journal, and secure one or more of the premiums mentioned above. We would strongly urge you to commence collecting names *at once*.

In sending in new subscriptions, remember to give the full address, with the county; and at the time of sending, state that the names inclosed are "for premiums."

WHAT TO DO WITH HONEY WHEN BROKEN OUT OF THE SECTIONS.

At present we are having very good success in selling such honey at retail, put up as follows: Two cakes of honey are laid in one of the wooden butter-dishes, recently described by Ernest, for bee-feeders. If these are to be retailed at once, nothing is necessary—just sell your customer the honey, plate and all. Of course, you don't need to ask him to bring back a plate that costs less than half a cent, and which weighs less than an ounce. In case, however, 100 lbs. or more of the honey is to be sold out, a pound or two at a time, something must be done to protect the plates of honey from dust, flies, etc. The way we do it is to slip the plate, with its contents, into a paper bag; fold the end so that it makes a tight package. You can then place them on shelves along in a row. Honey that would have brought 20 cts. a pound, if it hadn't been broken, sells pretty fairly at 18 cts.; but we have to lose the weight of the section which was thrown away. This is one ounce or more; and with the honey that drips we don't realize over 16 cts., so that it is not to be advised, unless you have broken honey or something in large frames or boxes which must be cut out, to retail. These same wooden plates will do very well for retailing extracted honey, especially if it is candied solid. Slip the plate with its contents into a paper bag, then your customer has a very good package to carry home; but he must handle it as he does butter—he can not very well throw any thing on top of it.

"A FALSE BALANCE IS ABOMINATION TO THE LORD; BUT A JUST WEIGHT IS HIS DELIGHT."

Apples are getting to be very scarce. While a year ago we did not dare to offer 25 cts. a bushel for nice winter apples, we have, during the past few weeks, been offering 50, 60, and 75; and as we could not get them even then, we sent to Cleveland for choice apples, which were offered for $2.50 a barrel. There used to be three bushels in a barrel; and as the barrel is worth 10 cts. to pack things in, our apples would cost us exactly 80 cts. a bushel, and we could retail them on the wagon for 25 cts. a peck, or a little more. Well, the apples were large, smooth, and nice; but the barrels, instead of having the nice plump look that barrels used to have, were lank and lean—sides almost straight, and not as large around as barrels used to be, either. Come to measure them out, instead of three bushels there was only a little over two. Come to take notice of the barrels, we find that, although they were pretty much one height, they are of all diameters, from the old-fashioned flour-barrel, down to something that looks more like the joint of a stovepipe, both in form and size. Instead of selling our apples at 25 cts. a peck, we had to ask 35 and 40. Of course, that made even our old customers accuse us of being greedy and avaricious. Why didn't the man who advertised his apples say plainly that his barrels were of the modern contracted sort? Perhaps he may say he bought them for barrels, and that folks who buy must take their chances as he did. But I tell you, friends, this whole business is not only abominable in God's sight, but it is abominable in the sight of every good man. It spoils faith in humanity, and I don't know but that it spoils faith in God, to see the world going over into this kind of swindling. Who is cheated in the end? I believe it is the man who decides to put up his produce in such a barrel. I feel so vexed when I look at these miserable excuses for barrels, that I feel like saying that I never want any thing more to do with the man who sold them to me, in any way, shape, or manner. You may say that he didn't put them up; but, my friend, he accepted them from the producer—from the man who sold them to him, and he proposed to get custom by advertising them as barrels of apples. Now, is there any thing in our own industry like this barrel business? If so, may God help us to get it out. Scant measure may give a man a few cents for the time being, but eventually his good name is gone, his reputation is gone. Not only is he losing in this world, but he is losing in the world to come. He neither lays up treasure on earth nor in heaven. If anybody has any good honest apples to sell, in good honest barrels, we should like to hear from him. Not only is just weight a delight to God, but it is a delight to humanity the world over, and the best advertisement that any man can possibly have of himself and of his business.

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On account of the death of the proprietor, J. D. Enas' ranch of 240 acres, part in fruit, 80 stands of bees, steam machinery for the manufacture of supplies, a well-established business; land will be sold in 40 or 80 acre tracts. Stock, farming implements, and a large stock of apiarian supplies. For particulars address **MRS. J. D. ENAS,**
20-6d Box 306. **Napa City, Cal.**

W. Z. HUTCHINSON,

FLINT, GENESEE CO., MICH.,

Has published a neat little book of 45 pages, entitled "The Production of Comb Honey." Its distinctive feature is the thorough manner in which it treats of the use and non-use of foundation. Many other points are, however, touched upon. For instance, it tells how to make the most out of unfinished sections, and how to winter bees with the least expense, and bring them through to the honey harvest in the best possible shape.

Price of book, 25 cents. Stamps taken, either U. S. or Canadian. 10tfdb

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TO DEALERS IN BEE-SUPPLIES.

We are now ready to figure with you for your next season's supplies.

G. B. LEWIS & CO.,
1tfdb **Watertown, Wis.**

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For Cards and Stationery for Bee-keepers and Others.

Besides our beautiful eight-color chromo card, we have other neat designs, also a fine selection of fancy address cards, for old and young, for business and amusement. Also two and three letter monograms, all at low prices. **See Here,** 50 fancy printed cards, 15 cts.; 300 envelopes, 300 letter-heads, printed, $1. Package 25 assorted cards, 10 cts. Neat box of cards and honey candies, 15 cts. Circulars free. Address J. H. MARTIN, Hartford, N. Y.
20tfdb

MUTH'S HONEY-EXTRACTOR,

SQUARE GLASS HONEY-JARS,

TIN BUCKETS, BEE-HIVES,

HONEY-SECTIONS, &c., &c.

PERFECTION COLD-BLAST SMOKERS.

Apply to CHAS. F. MUTH & SON,
CINCINNATI, O.

P. S.—Send 10-cent stamp for "Practical Hints to Bee-Keepers." 1tfdb

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FOR SALE.

A bee-ranch in San Diego Co., Cal., containing 320 acres of land, 400 stands of bees, empty hives, extractors, tank, and other fixings necessary to run a first-class bee-ranch. For particulars and price inquire of E. LOVETT,
21-2db Bernardo, San Diego Co., Cal.

DADANT'S FOUNDATION

is asserted by hundreds of practical and disinterested bee-keepers to be the cleanest, brightest, quickest accepted by bees, least apt to sag, most regular in color, evenest, and neatest, of any that is made.

It is kept for sale by Messrs. T. G. Newman & Son, Chicago, Ill.; C. F. Muth, Cincinnati, O.; Jas. Heddon, Dowagiac, Mich.; Dougherty & Wiley, Indianapolis, Ind.; B. J. Miller & Co., Nappanee, Ind.; C. H. Green, Waukesha, Wis.; Smith & Goodell, Rock Falls, Ill.; Ezra Baer, Dixon, Lee Co., Ill.; E. S. Armstrong, Jerseyville, Illinois; Arthur Todd, 2122 North Front Street, Phil'a, Pa.; E. Kretchmer, Coburg, Iowa; P. L. Viallon, Bayou Goula, La., M. J. Dickason, Hiawatha, Kansas; J. W. Porter, Charlottesville, Albemarle Co., Va.; E. R. Newcomb, Pleasant Valley, Dutchess Co., N. Y.; D. A. Fuller, Cherry Valley, Ill.; J. B. Mason & Sons, Mechanic Falls, Maine; G. L. Tinker, New Philadelphia, O., Jos. Nysewander, Des Moines, Ia.; Aspinwall & Treadwell, Barrytown, N. Y.; Barton, Forsgard & Barnes, Waco, McLennan Co., Texas, W. E. Clark, Oriskany, N. Y., G. B. Lewis & Co., Watertown, Wis., E. F. Smith, Smyrna, N. Y., J. Mattoon, and W. J. Stratton, Atwater, O., Oliver Foster, Mt. Vernon, Iowa, and numerous other dealers.

Write for *samples free*, and price list of supplies, accompanied with **150 Complimentary** and *unsolicited testimonials*, from as many bee-keepers, in 1883. *We guarantee every inch of our foundation equal to sample in every respect.*

CHAS. DADANT & SON,
3btfd **Hamilton, Hancock Co., Illinois.**

If you Wish to Obtain the

Highest Price for Honey

THIS SEASON,

WRITE TO HEADQUARTERS,

F. G. STROHMEYER & CO.,
Wholesale Honey Merchants,
17-4db **122 Water St., New York.**

Costs less than 2 cents per week.

THE CANADIAN BEE JOURNAL.

THE FIRST DOLLAR WEEKLY IN THE WORLD.

THE D. A. JONES CO., PUBLISHERS, BEETON, ONTARIO, CAN.

D. A. Jones is its editor, and this fact is a guarantee of its worth. It is thoroughly practical and contains weekly excellent articles from leading bee-keepers in the United States and Canada. Fifty-two numbers make a volume of 1040 pages. American currency and stamps at par. Samples free.

APPLE-TREES.

600 Greenings, Baldwins, and Spies; 5 trees, 6 to 8 feet high, $1.00; 8 to 10 ft., $1.25; 10 or more, 6 to 8 ft., 15 cts. each; 8 to 10 ft., 20 cts. each. Strictly choice trees, and twice the size of common nursery stock. C. M. GOODSPEED, Thorn Hill, N. Y.
2-48-d

ON 30 DAYS' TRIAL.

20-7db

THIS NEW
ELASTIC TRUSS

Has a Pad different from all others, is cup shape, with Self-adjusting Ball in center, adapts itself to all positions of the body while the **ball** in the cup **presses back** the **intestines just as a person does with the finger.** With light pressure the Hernia is held securely day and night, and a radical cure certain. It is easy, durable and cheap. Sent by mail. Circulars free. EGGLESTON TRUSS CO., Chicago, Ill.

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Wants or Exchange Department.

Notices will be inserted under this head at one-half our usual rates. All ad's intended for this department must not exceed 5 lines, and you must SAY you want your ad. in this department, or we will not be responsible for any error. You can have the notice as many lines as you please; but all over five lines will cost you according to our regular rates. Of course, this department is intended only for bona-fide exchanges.

WANTED.—To exchange High-Class Fowls, eight varieties, for good type-writer or foundation. Circulars free. 14tfdb A. H. DUFF, Creighton, O.

WANTED.—To exchange Wheeler & Wilson sewing-machines (new) for honey, bees, or supplies. J. A. GREEN, Dayton, Ill. 20tfdb

WANTED.—Situation for 1888, by an expert bee-keeper. Address FRANK CURL,
20tfdb Box 62, East St. Louis, Ill.

WANTED.—5000 lbs. dark extracted candied honey, in exchange for raspberry, strawberry, and Chapman honey-plants.
22tfdb DR. A. B. MASON, Auburndale, O.

WANTED.—To exchange 250 colonies of bees, for horses, mules, wagons, buggies, and 4 h. p. engine, or any thing useful on a plantation.
21tfd ANTHONY OPP, Helena, Phillips Co., Ark.

WANTED.—To buy 200 colonies of Italians in chaff and Simplicity hives, to be delivered April 1st. Also extracted honey, to be delivered now. 23d
J. B. ALEXANDER, Hartford City, Ind.

WANTED.—To exchange, Alderbrook Poultry-Farm, 12 acres, for bees or personal property, or offers, or will rent. D. E. DARROW, 23d
West Eaton, N. Y.

WANTED.—To exchange 2 trios of Houdan Chicks and one Brown Leghorn cockerel, on sections, foundation, or bees, the latter to be delivered in the spring of 1888; the above birds are very fine. 23d
Address P. D. MILLER, Grapeville, Westm'd Co., Pa.

G. B. LEWIS & CO.

We make the best Bee-Hives, the best sections, the best shipping-crates, the best frames, etc.

We sell them at the lowest prices.

Write for free illustrated catalogue.

G. B. LEWIS & CO.
WATERTOWN, WIS. 1tfdb.

FOR SALE.

A bee-ranch in San Diego Co., Cal., containing 320 acres of land, 400 stands of bees, empty hives, extractors, tank, and other fixings necessary to run a first-class bee-ranch. For particulars and price inquire of E. LOVETT,
21-2db Bernardo, San Diego Co., Cal.

FOR THE SEASON OF 1888.

Headquarters in the South.

TENTH ANNUAL CATALOGUE NOW READY.

Prices of hives, frames, sections, etc., greatly reduced. The only steam-factory erected in the South, exclusively for the manufacture of Bee-Keepers' Supplies.

ITALIAN QUEENS.

Tested, ready in March. Untested, by April 1st. Contracts taken with dealers for the delivery of a certain number of queens per week, at special figures.

FOUR-FRAME NUCLEUS,

with pure Italian queen, containing 3 pounds of bees when secured—in April and May, $4.00; after, 25 cts. less. Safe arrival and satisfaction guaranteed on all queens and nuclei.

For more particulars, send for Tenth Annual Catalogue.

P. L. VIALLON.
Bayou Coula, Iberville Parish, La.

DADANT'S FOUNDATION FACTORY, WHOLESALE AND RETAIL. See advertisement in another column. 3btfd

Names of responsible parties will be inserted in any of the following departments, at a uniform price of 20 cents each insertion, or $2.00 per annum, when given once a month, or $4.00 per year if given in *every* issue.

Untested Queens

FOR $1.00 FROM JULY 1ST TILL NOV. 1ST.

Names inserted in this department the first time without charge. After, 20c each insertion, or $2.00 per year.

Those whose names appear below agree to furnish Italian queens for $1.00 each, under the following conditions: No guarantee is to be assumed of purity, or anything of the kind, only that the queen be reared from a choice, pure mother, and had commenced to lay when they were shipped. They also agree to return the money at any time when customers become impatient of such delay as may be unavoidable.

Bear in mind, that he who sends the best queens, put up most neatly and most securely, will probably receive the most orders. Special rates for warranted and tested queens, furnished on application to any of the parties. Names with *, use an imported queen-mother. If the queen arrives dead, notify us and we will send you another. Probably none will be sent for $1.00 before July 1st, or after Nov. If wanted sooner, or later, see rates in price list.

*A. I. Root, Medina, Ohio.
*H. H. Brown, Light Street, Columbia Co., Pa. 1tf
*Paul L. Viallon, Bayou Goula, La. 19tfd
*S. F. Newman, Norwalk, Huron Co., O. 19tfd
*D. G. Edmiston, Adrian, Len. Co., Mich. 19tfd
*Jos. Byrne, Ward's Creek, East Baton Rouge Par., La. 19tfd
*E. Burke, Vincennes, Knox Co., Ind. 5-3
C. C. Vaughn, Columbia, Tenn. 21tfd
J. M. Jenkins, Wetumpka, Ala. 3-1

Hive Manufacturers.

Who agree to make such hives, and at the prices named, as those described on our circular.

A. I. Root, Medina, Ohio.
P. L. Viallon, Bayou Goula, Iberville Par., La. 21tfd
C. W. Costellow, Waterboro, York Co., Me. 1-23
R. B. Leahy, Higginsville, Laf. Co., Mo. 21tfd
J. M. Jenkins, Wetumpka, Ala. 3-1
F. A. Snell, Milledgeville, Carroll Co., Ill. 4-5

HONEY COLUMN.

CITY MARKETS.

COLUMBUS. — *Honey.* — Market unchanged. Receipts are light. We quote choice white honey, 18@20c; extracted, 8@10. *Beeswax*, 20@25c.
EARLE CLICKENGER,
Nov. 22. 117 South 4th St., Columbus, Ohio.

NEW YORK.—*Honey.*—Fancy white, 1-lb. sections, 17@19c; 2 lbs., 15@16; lower grades, 1 and 2c per lb. less; buckwheat, 1 lb. sections, 11@12c; 2 lbs., 10@11; extracted, white, 9@10; buckwheat, 6@7. Market continues firm at above quotations.
F. G. STROHMEYER & CO.,
Nov. 22. 122 Water St., New York.

KANSAS CITY.—*Honey.*—The demand for 1-lb. sections is good; very little on the market. 1-lb. sections, white, 20@22c; dark, 15@17; 2 lbs., white, 18c; dark, 15@16; extracted, white, 6½@7; dark, 5@6.
HAMBLIN & BEARSS,
Nov. 23. 514 Walnut St., Kansas City, Mo.

PHILADELPHIA.—*Honey.*—The demand seems to be curtailed by the high quotations when price of honey is over 15 or 16c per lb. Quotations here are nominally the same, but there is no movement at the prices. To sell at present is to take less. White clover, 1 lb. sections, 17@18c; buckwheat, 11@12; 2 lb. sections, and inferior quality, is 1 to 2c lower; extracted, 7@10c. Buyers here object to glassed combs; glass, at 12 to 16c per lb., is too high, even if lined with honey. PANCOAST & GRIFFITHS,
Nov. 21. 122 Dock St., Philadelphia, Pa.

MILWAUKEE.—*Honey.*—This market is firm on values of honey. Demand fair. Can quote choice white 1-lb. sections, 20@21c; 2 lbs., 18@19; 2½ lbs., 16@18; extracted, white, in kegs and half-bbls., 8½@9c; in cans and pails, 9@10; amber and dark, in kegs, 6½@7c. *Beeswax*, nominal, 22@25.
A. V. BISHOP,
Nov. 29. Milwaukee, Wis.

BOSTON. — *Honey.* — Fancy one-pound comb, 18@20c; two-pound comb, 17@18c. Extracted, 7@8c. Trade is not very brisk. BLAKE & RIPLEY,
Nov. 21. 57 Chatham St., Boston, Mass.

ST. LOUIS.—*Honey.*—We quote choice comb 16@18c; latter is for choice white clover in good condition, and in 1-lb. sections. Strained, in bbls., 4½@5 cts. Extra fancy, of bright color and in No. 1 packages, ¼ cent advance on above. Extracted, in bbls., 5½@6c; in cans, 7@8c. *Beeswax*, 20½c for prime.
Market very firm at above prices. Owing to the short crops reported everywhere, we look for a still further advance in prices.
Nov. 21. D. G. TUTT & CO.,
206 N. Commercial St., St. Louis, Mo.

CLEVELAND.—*Honey.*—Honey is in fair demand at 19@20c per lb. for 1-lb. sections of white clover and basswood; 2-lb. sections, about 2c per lb. less. *Beeswax*, 22@25c. A. C. KENDEL,
Per Carroll.
Nov. 21. 115 Ontario St., Cleveland, O.

CHICAGO.—*Honey.*—Receipts are increasing, and the surplus, or stock on hand over the daily demand, is larger than it has been at any time this season. Prices range from 18@20c per lb. for the 1-lb. sections of white; 2 lb. sections, same grade, 15@16c; extracted, 7@10. *Beeswax*, 23@25.
R. A. BURNETT,
Nov. 21. 161 So. Water St., Chicago, Ill.

NEW YORK.—*Honey.*—Honey is moving very rapidly, with indications for further advance in prices. White, extracted goods, scarce.
THURBER, WHYLAND & CO.,
Nov. 22. New York City.

KANSAS CITY.—*Honey.*—White 1-pound sections, 18@20c; 2 lbs., 16@18; 1 lb., dark, 16@18; extracted, white clover or basswood, 8@9; dark, in bbls., 3@5; California 1 lb. sections, white, 18@19c; 2 lbs. white, 18c; extracted, 8@9. CLEMONS, CLOON & CO.,
Nov. 25. Kansas City, Mo.

DETROIT.—*Honey.*—Best white, in 1-lb. sections, 17@18c; extracted, 9@10. *Beeswax*, 21@23c.
Bell Branch, Mich., Nov. 22. M. H. HUNT.

FOR SALE.—About 1000 lbs. clover and basswood extracted honey, and about 500 lbs. buckwheat extracted honey. This honey is put up in kegs, holding about 160 lbs. each. Write me for prices.
Charlton, Saratoga Co., N. Y. J. I. PARENT.

FOR SALE.—I can yet furnish a few thousand lbs. of *extra fine* comb honey in 1-lb. sections and 24-lb. cases, at 18 cents cash here. This is the last lot of honey I am able to secure. First come, first served. JOS. NYSEWANDER.
Des Moines, Ia.

CAUTION.

Do not ship me Honey without previous correspondence. I will not be answerable for the results, if you do. ARTHUR TODD,
2122 N. Front, Philadelphia.

UNTIL April First.—Frames only. We will cut to order, regular or odd size brood-frames for $1.50 per 100; 500 $6.25; 1000, $10.00; 10,000, $95.00. When ordering, send sample frame in flat, if possible. All orders shipped promptly. Freight prepaid on all orders of consequence to your nearest large city. Remit by P. O. order on Salem, Mass.
Middleton, Mass. J. B. THOMAS & Co.

FOR SALE.—Eight or ten strong hives of bees, at $3.50 each. Also 15 gallons of bright thick honey, from California; $1.00 per gallon. I have one of Muth's large extractors for sale, nearly new. How much am I offered? Or I will exchange it for a good cabinet-organ. MRS. A. V. CAMPBELL.
Middleton, Tenn.

DADANT'S FOUNDATION FACTORY, WHOLESALE AND RETAIL. See advertisement in another column.

"FABLES AND ALLEGORIES."

Much to my surprise, we have sold, during the last year, over sixty of these beautiful and valuable books. Although at the time I considered the book well worth $2.00, I didn't suppose there were many who would want to pay that price for a book of that character. When we take into consideration, however, that it is not only about as handsome a book as can be found in our bookstores, externally and internally, but that is also a book in which godliness and purity shine forth from every page, it is perhaps not so very surprising. The book is not, in one sense, a religious book, for the principles are taught indirectly, in the form of a little story or fable, and sometimes the reader does not see at once the application; but when it bursts upon him he feels a spirit of thankfulness for having been taught perhaps the very lesson he needs, by way of a sort of parable. The book contains 512 pages and 350 engravings. Many of the latter are some of the finest engravings that are to be found in modern print. The author of this work, Mr. Charles Foster, went to his heavenly rest during the past year; but it seems to me that his book will stand, much as the Pilgrim's Progress does, to help humanity through ages to come. Our new stock of these books for the coming holidays will be even nicer than those of last year, for they are in gilt binding; but the price will remain the same; viz., $2.00 each; two for $3.50, three for $4.65 each; five or more, $1.60 each. If wanted by mail, you will have to send 32 cts. extra, as the book is so very large and heavy. We can send it for five new names for GLEANINGS, you paying postage.

A. I. ROOT, Medina. O.

CONVENTION NOTICES.

The Nebraska bee-keepers will meet in Lincoln, Neb., on Jan. 11, 1888, for their annual meeting.
Humbolt, Neb., Nov. 11, 1887. HENRY PATTERSON, Sec.

The Susquehanna County Bee-Keepers' Association will meet at New Milford, on Jan. 7, 1888. Subjects for discussion: The best way to prevent swarming; also, Is it advisable to Italianize? All bee-keepers are cordially invited.
H. M. SKELEY, Sec., Harford, Pa.

The next annual meeting of the Mich. State B. K. Association will be held at East Saginaw, in the city-council room, Dec. 7 and 8. Headquarters at the Sherman House, where rates have been secured at $1.25 per day. All are invited, and we expect a large attendance. H. D. CUTTING, SEC.
Clinton, Mich., Nov. 18, 1887.

The Southeastern Michigan Bee-keepers' Association will hold its annual meeting in the Supervisor's room, in the Court-house, at Adrian, Mich., Dec. 15th, 1887, forenoon and afternoon session; also an evening session, if the members it. A program is now preparing, including interesting papers on various topics of importance. The question-box will be a prominent feature. Come prepared to ask and answer questions. Election of officers will take place at the afternoon meeting. There will be plenty of room for exhibiting fixtures, so bring along any thing you may have that will be of interest to those of the pursuit. Those who are not familiar with the interior of the Court-house should enter at the east front and go up the stairway to the right, then turn to the left. The Lenawee Co. Horticultural Society meets Dec. 14th. Those who can will find it profitable to attend the meetings of both societies.
Adrian, Mich. A. M. GANDER, Sec'y.